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ABSTRACT

Seven papers from the 1988 CAUSE conference's Track IV, Organization and Personnel Issues, are presented. They include: "Positive Management: Techniques and Retreats" (Janet Wixson); "Data Administration: What Is It, Where Is It, How Is It Done?" (Karen L. Miselis, Lawrence A. Jordan, and Ronald Hoover); "The Departmental Planning Team: A Bridge to the Future" (Cynthia S. Cross, Marianne J. Elser, and Jill B. Tuer); "The Trials, Tribulations, and Triumphs of Establishing and Maintaining an Information Center in a Multi-Campus College District" (Anita Adams); "Putting the 'Service' Back into Computer Services: Organizing Computing for the Effective Delivery of Services" (Betty Le Compagnon and John F. Leydon); "Managing for Successful Innovation" (Eugene E. Payne); and "Organizing for User Services" (Steven Saltzberg and Thomas Miller). SM)

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Information Technology: Making It All Fit

Proceedings of the 1988 CAUSE National Conference

TRACK IV: Organization and Personnel Issues

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Track IV
Organization and Personnel Issues

Coordinator:
Albert L. LeDuc
Miami-Dade Community College

Once a direction has been set by policy and planning, organization and personnel issues emerge as critical issues. Not only is it important to determine where information will be created, preserved, and communicated, it is equally important to determine what information resource functions will be included in the organization.

Papers in this track describe individual institutional approaches to organizing and staffing the information resource management functions to meet the needs of the institution.

Janet Wixson, University of Alabama/Birmingham

(From left) Lawrence A. Jordan, California State University/Los Angeles; Gerald McLaughlin, Virginia Tech; Karen L. Miselis, University of Pennsylvania; and Ronald Hoover, Penn State University

Positive Management Techniques and Retreats

Janet Wixson
The University of Alabama at Birmingham
Birmingham
Alabama

Computer center directors bear the responsibility for creating dynamic, encouraging, and effective environments which maximize the resources within their charge. Positive management techniques yield great benefits in areas such as group effectiveness, problem solving, and staff commitment. This paper defines some of the qualities necessary to a positive environment, suggests some easy methods to gauge your organization's attitude, and addresses some simple methods of developing a fundamentally positive management philosophy. Particular attention is given to the management retreat process that has proven so effective for our computer center. Basic guidelines are presented to assist an organization wishing to implement a management retreat.

A few months ago, The University Computer Center (TUCC) of the University of Alabama at Birmingham (UAB) received, at our request, a peer review from The University Computer Center Directors Special Interest Group of ACM. A peer review consists of three data processing directors from member academic institutions generously donating their time to visit your facility. They interview both the computer center staff and your user community. Upon completing their investigation, the review committee prepares a written report outlining their conclusions. The group's findings present the director with an objective analysis of such vital areas as service, user satisfaction, staff competence and morale.

Our peer review shows an exceptionally high degree of satisfaction in our user community, an unusually positive attitude among the computer center staff, a very low personnel turnover, and a high degree of productivity relative to application development and maintenance. This has not always been the case. As a matter of fact, in 1980, the situation was so bad that the university was seriously considering contracting our administrative data processing activities to an external management firm. The environment at that time was characterized by an annual employee turnover rate of 78%, several failed attempts at major application development, and an irate and dwindling user community.

The turnaround of the computer center started with a change in our basic management philosophy. A primary tool we found to initiate and maintain a more effective management philosophy is the management retreat. The purpose of this session is to present the positive management philosophy of our computer center (whose primary mission is administrative data processing) with particular emphasis on our management retreats.

Overview of Management Philosophy

The mission of a computer center is, obviously, to provide computing services to its user community--whether administrative, academic, or a combination of the two. The goal of all computer centers should be to provide their user communities with excellent service at a reasonable cost. In order to know if you're reaching that goal, a computer center needs to agree on a definition of excellent service. Our definition is: "Excellent service is whatever the receiver of the service perceives excellent service to be." The premise underlying successful completion of our goal is: "The perception of our users is not just important, it is everything!" The objective of TUCC management is to create a positive environment in which the staff's attitude reflects a commitment to delivering excellent service to our users.

An organization with such an attitude will likely demonstrate the following characteristics:

1. Network Organization (vs. Hierarchical)
2. Teammanship
3. High Levels of Communication
4. Ideas Encouraged Intensely
5. Direction towards Service

The first four characteristics (network, teammanship, communication, and idea encouragement) describe the desired inter-personal working relationship of the staff. Such an environment, when cultivated by the director, will propagate throughout the organization. These positive qualities are spread through:

1. Encouragement of individual thought
2. Freedom to speak one's ideas
3. Minimization of rank in the exchange of ideas
4. Respect for the competence of one's peers, bosses, and subordinates
5. Respect for one's own competence
6. A positive problem solving attitude

I contend that once you instill these ideas within your staff, your group cannot help but be service directed.

Additionally, instilling these attitudes will not only increase the value of each individual within your organization, it will facilitate group effectiveness. Group effectiveness is a function of conflict, creativity, competence, and commitment. Full scale involvement by group members causes divergent ideas and values to surface. Conflict can initiate creativity. Only when individuals become aware that their opinions differ from those of others are they likely to reexamine their own personal assumptions and intuitively recognize a need for more information. This reassessment process forces new insights to emerge. It is a self-feeding process. The ideas that come from such interaction have the compelling quality of logical consensus, plus they spark further creativity. Commitment is a psychological state and cannot be achieved through coercion, persuasion, or directive. Dedication is self generated and is strengthened through an individual's participation within the group.

I am assuming that by now I have sold all of you on the value of creating a dynamic and dedicated environment. After all, the objective of management is to get things done through people. This is done best when the whole person is utilized (intellect as well as labor), and the person is committed to the task at hand.

Positive Administration Techniques

An organization needs establish only two premises to begin the creation of a positive environment. The first is accountability--that is the acceptance of responsibility by each individual for meeting the goal of the computer center. The second is an understanding of and a commitment to positive problem solving. Both of these qualities can be achieved more easily than you might imagine. The important thing is to consistently emphasize these two principles.

Determining the accountability attitude of your group can be done with a simple test. Gather your staff together to discuss current topics of

concern. Listen carefully to the pronouns they use during the discussion. Which word do they use most frequently?

They
We
I/You

For example, which statement would you be most likely to hear in a meeting of your staff members?

They have decided that the programming standards should be reviewed.
We have decided that the programming standards should be reviewed.
I have decided that the programming standards should be reviewed.

The use of the word "they" implies distance between the speaker and his subject. Whatever is being said, It means:

The issue is out of my/our control.
I/we are not responsible for the result.

Use of the word "we" implies:

It is in our control.
I/we are responsible for the result.

Note: Use of the words "I" and "you" not only define areas of responsibility, they often imply that the speaker feels the issue deserves immediate attention.

Encourage your staff to become aware of the subtleties in the difference. Insist they listen to themselves and others. Every time someone says "they," invite the group to confront the speaker with the question, "Who is They?" The idea is for the staff (from the student assistants to yourself) to talk and think with "we's," "you's," and "I's" in any discussion involving computer center operation, mission, or service.

The other crucial attitude is positive problem solving. Positive problem solving is the act of directing resources (thought and action) towards how a problem can be solved or how a task can be accomplished. It can be contrasted against negative problem solving (what most people actually do) which is directing energy towards itemizing reasons why a problem should not or cannot be solved. This might also be called solution avoidance. I am constantly amazed at how much negative problem solving I hear in some organizations. Imagine, many companies spend millions of dollars on personnel services supposed to solve problems and accomplish tasks, but what they get for their money is a list of reasons why the problems and tasks could/should not be solved or accomplished. It turns out to be an absolute waste of resources. Positive problem solving and negative problem solving require the same amount of energy. Why don't we opt for the positive approach and accomplish something with our resources? In addition to getting the work done, you and your staff will start finding your jobs and environment a lot more rewarding. This can only result in increased morale.

The first step in making positive problem solving a part of your organization's management strategy is to begin practicing it yourself. The second step is to teach your staff about it. The third step is to translate any negative problem solving that you find into the positive approach.

Once we begin practicing basic positive thinking and behavior, it's time to go on the first management retreat. Retreats can be held for any group in an organization, but the first one should be for the managers. They are the crucial group to indoctrinate with the new management philosophy. Then you may consider working with other groups as you see the need to do so.

Getting Ready for the Retreat

You will need to plan for the retreat to last 2½ to 3 days. Pick a quiet relaxing place away from campus. State parks usually offer such facilities. Perhaps, a lodge in the mountains, on a lake, or at the seaside might be available. Selecting a setting away from the usual atmosphere is more important than the specific facilities provided. For example, it is not necessary that restaurants be available. I have found that it is really easier to cook your own food than to descend on a restaurant. However, it takes a little extra planning to do this. Delegate someone to handle menu preparation--who and what's cooking for each meal. Make sure everything is understood before leaving in order to avoid confusion. Meal cooking in groups offers excellent opportunity to build team skills.

Begin a series of communications with the selected attendees about two to three weeks prior to the retreat. This correspondence serves several purposes. It makes people feel involved with the planning process, lets them know what sort of experience they're in for, and it stimulates them to begin thinking about universal problems rather than day-to-day operational problems. The success of the retreat can be greatly enhanced if your attendees come prepared with some issues that they have determined to be of importance.

Your first correspondence should include a statement of direction which will lead the retreat discussions. Examples of statements of direction which TUCC has used are:

> The technologies of computing and communications increasingly overlap. To maximize the benefits of new technological offerings, "technocrats" from both areas should likewise overlap their expertise, forming new task forces who exploit the opportunities in the blurred lines of separation. During FY 88/89, The University Computer Center and Communications Services will position themselves for the installation of the new voice/data switch targeted for December 1989, by identifying new service made available by the new switch and overlapping technologies, and identifying task forces of "technocrats" to investigate the new opportunities.

> During FY 86/87 The University Computer Center will do more with fewer people and dollars while keeping morale high.

During FY 84/85 TUCC will devote considerable resources toward increasing the value of data found at TUCC by making that Institutional Data more available to end user departments. More specifically TUCC will utilize new technological developments in the areas of:

Protocol converters
Personal computers
The Information Center,
or
Horses, like trends, are easier to ride in the direction they are going.

Of course, the initial correspondence should also include the specific retreat dates and location (remind attendees to make sure that their absences are covered). It should be stated that dress will be comfortable and casual.

A few days later, prepare a second communication defining the management retreat purpose. The management retreat purpose is:

To develop a specific plan of action which will support the Statement of Direction for the year

and

To enhance communication and understanding among computer center personnel

This memorandum should also include a statement of the general rules which will govern the retreat.

General Rules for Participants

1. All energy resources will be directed toward how we can accomplish the agreed upon objectives. Conversation or thoughts directed towards why objectives should or could not be accomplished are taboo. The session chairman will strike negative problem solving comments.

2. All participants are equal. There is no management rank in planning sessions.

3. Participants cannot "put down" another participant's thoughts. However, any participant can add to an existing thought.

Your third and final correspondence (see how you're beginning to "psych everyone up" about the upcoming retreat) should include a set of thought provoking questions. Some examples are:

1. Are you an effective manager? Do you feel that you are effectively managed?
2. Do you think your abilities are trusted? Do you trust the abilities of your co-workers?
3. Would you rather work someplace else? Why or why not?

4. Are you proud of your accomplishments?
5. Do you think you are given adequate information and resources to do your job? Do you give your staff adequate information and resources to do their jobs?
6. Do your users view you as a resource or an obstacle?
7. Do your users have to manage your managing to provide them what they need in a timely manner?
8. Which do you think is more important to Delta Airlines--their passenger reservation applications system or their terminal network to access the reservation system?

Planning Process and Agenda

This final preparatory correspondence should include a description of the functional process to be used at the retreat. Your retreat schedule should be structured along the following lines:

1. Discuss and agree upon gross objectives to be met within the statement of direction. Provide these objectives.
2. Identify the problems that must be solved associated with each objective. Problems must be stated in complete sentences, i.e., because . . . . , therefore . . . . OR condition/cause--result/effect.
   Note: no discussion of possible solutions will be allowed during problem identification.
3. Prioritize the problems identified.
4. Discuss possible solutions for each problem. It may well turn out that the solution for one problem may also serve as a solution for another problem.
5. Prioritize the solutions.
6. Roll out an action plan from the solution identification. Each action plan should include a person or group responsible for completing or implementing and a target date.

Naturally, the gross objectives help guide the problem identification, solution identification, and prioritization process. They need to be stated in a simple and direct manner. Examples of past TUCC retreat gross objectives are:

1. Set up facilities to help users (and staff) acquire and use new technology
2. Encourage the use of P.C.'s in the development of administrative applications
3. Create and maintain a central repository of documentation about university data (Information about information for your information)
4. Increase the productivity of TUCC
5. Improve our effectiveness/trust with the user community
6. Set up guidelines for an office automation network
7. Implement ACF2 in an orderly fashion
8. Reduce risk in application support due to employee turnover

The last communication should also include a copy of the agenda. In planning your agenda, allow twice as much time for problem identification as you do for solutions. They are much more difficult to identify and state

succinctly. You will, of course, want to consider providing free time in the middle of the day for attendees to enjoy the surroundings. This time can always be made up in an evening session. In fact, discussions often continue long into the night under their own steam; folks really can get into this.

Sample Agenda

WEDNESDAY

I. Leave Computer Center for Calloway Gardens at 8:00 a.m. Wednesday, August 28, 1985. Check in, lunch.

II. 2:00 - 3:00
Review of planning methodology and opening remarks
Session Leader: Director

III. 3:00 - 4:00
Identification of Objectives
Session Leader: Jeanne

IV. 4:00 - 6:00
Problem Identification
Session Leader: Bob

V. 6:00 - ?
Cookout

THURSDAY

I. 8:00 - 10:00
Problem identification Continued
Session Leader: Bob

And so forth

I believe you get the point. Your specific times and events will depend on your personal arrangements.

Additional Retreat Guidelines

The first hour or two belongs to the director. This is the only time the director should take a leadership role in the retreat. However, this time is extremely important in setting the mood for the retreat. A relaxed and positive attitude needs to be established immediately.

On your first retreat, you will probably want to devote the initial director's session to talking about the process the retreat will follow. Since we do this every year, definition of the retreat process doesn't require all that time. Therefore, I take this time to present subjects such as:

1. Reviewing the key issues in a currently successful management study. I have done "book-reports" on In Search of Excellence, Megatrends, The One Minute Manager, and similar publications.

2. Talking about the effective management techniques we have discussed earlier (positive problem solving, commitment to excellence, group effectiveness, and so forth).

3. Discussing the priorities managers should use in decision making, such as: What's best for UAB? What's best for the department? What's best for the individual?

Each session should have a chairperson whose responsibilities are to assure that only positive problem solving is used. He must never allow anyone to put down another's ideas. For example, someone offers a solution to one of the specific problems identified in an earlier session and another attendee pipes up with, "that won't work because . . . ." The session chairperson should instruct the piper-upper to replace the objection with an acceptably stated problem defining the additional situation to be solved. The session chairperson is also responsible for taking notes of the session's activities. We have found that recording these notes on large flipcharts is the most effective technique.

Post-Retreat Synthesis

Over the past eight years, since our first experiment, I have taken groups on at least a dozen retreats. Never, in all those times, have we ever completed all that we wanted to do. Therefore, much organizing of ideas, task lists, priorities, problems and solutions (all the things that were talked about at the retreat) must be done after returning to the work place. When you get back to the office, you need to prepare a report consolidating your retreat accomplishments. It should include task lists, action plans, specific individual responsibilities, and target dates. These goals should be reviewed in your regular staff meetings, on a monthly basis, to monitor progress and keep the retreat objectives visible. Your written report should include specific statements of the proposed problem solutions. Add your personal comments pertinent to the various sessions. This report should be distributed throughout the entire computer center for review. Publishing your results makes everyone realize that their problems are being addressed, and it educates them in the retreat methods. This helps ensure that future attendees are acquainted with what the retreats are all about.

Conclusion

At the risk of undercutting all the enthusiasm I have tried to generate for the retreat process that we have found so successful, let me make your aware of the one major risk that I see with this system. Management retreats are a motivator. However, I have a story I tell at the end of each management retreat. It goes like this:

The XYZ firm is a small company of approximately 100 employees. This firm manufactures widgets. The President, Ms. Jolly, struggled for many years

managing the firm, just barely showing a profit. One year she encouraged everyone to work especially hard, and, indeed, the company showed a greater profit that year. Ms. Jolly was most grateful and appreciative of her staff's hard work, and she wanted to do something to demonstrate her appreciation. She decided to give everyone a turkey for Christmas. All the employees were most thankful for those turkeys and appreciative of her thoughtfulness. Next year, close to Christmas, some of the employees started asking Ms. Jolly if they were going to get a turkey for Christmas again. Ms. Jolly felt obligated to repeat this gesture, and so, once again, she gave them turkeys for Christmas. The following year some of the employees pointed out to Ms. Jolly that their turkeys were a little smaller than the others--still other people indicated that they preferred ham to turkey, and another group asked if they could have cash instead.

The moral of this story is that motivators can turn into demotivators. This story is well known in our computer center. Frequently, the comment, "Sounds like turkeys for Christmas to me," can be heard from somewhere down the hall. The point in circulating this story is to keep your staff aware of the motivation/demotivation pitfall and provide a communication tool to confront it when it starts to surface.

A recent Fortune magazine cover article, "The Winning Organization," makes several points which underscore the positive management philosophy being presented. The article states that the hierarchical structure adopted by business nearly a century ago (a system, incidentally, copied from the military) will fade. With the help of information technology, managers can increase the number of people reporting to them by several orders of magnitude. Hence the minimalization of rank, both in importance and actuality, facilitates a leaner payroll and a more idea intensive organization. Shouldn't we computer center directors be the first to realize within our own staffs the business benefits of information technology, the very technology we deliver?

Moreover, most all the baby-boom generation now hold jobs. Growth of the work force will slow down significantly--from 2.4% a year in the Eighties to 1.2% in the Nineties. The Bureau of Labor statistics estimate that the number of jobs will begin to grow faster than the labor force. Companies will have to offer new inducements, especially to women, who will make up two-thirds of the new workers, to continue to attract employees.

A current buzzword in employee motivation is "ownership." This can mean either an equity share of the organization or just a worker's feeling that he counts. Fortune quotes Harvard Business School professor J. Richard Hachman; "If you want me to care, then I want to be treated like an owner and have some real voice in where we're going." That is exactly what happens at TUCC with the management retreats; it is a true win-win scenario. Employees care because they have a voice; management reaches better decisions because the employees have that voice.

In summary, while preparing this talk, I reread a memorandum I wrote to the staff after the 1984 retreat. It expresses my feelings very well.

"Enclosed is a summarization of the objectives defined, problems identified, and solutions suggested as the result of the TUCC Spring '84 Management Retreat. From my personal viewpoint, and that expressed to me by others, this was the most productive retreat we have had. The retreat was in itself a solution to many of the problems identified. It was instrumental in providing a forum in which we all became more aware of TUCC happenings and internal TUCC communications needs. Teammanship reached an all time high. An environment was facilitated that resulted in feelings of personal motivation, which I am convinced will be contagious and increase the productivity of the entire staff.

It is interesting to note that almost all group attendees expressed their observation that the retreat brought to their attention the progress we have made at TUCC. This is in itself rewarding. Although difficult to express in words, this retreat had an air of forward movement with few existing central problems. In contrast, the last retreat had been more directed at surviving the state of affairs. I was and am overwhelmed by and proud of this center's productivity. This retreat demonstrated the sincere desire for each attendee to make TUCC more valuable to UAB and a better place to work for all of us."

I have never failed to return from a retreat drained and yet satisfied. I am convinced that the techniques we have discussed will improve the operating effectiveness and morale of any computer center willing to make the small investment it takes to get the process begun. I encourage all of you to consider a positive management philosophy and the retreat process as vehicles to bring increased excellence to your organizations. It works for us.

Bibliography

Blanchard, Kenneth H., and Spencer Johnson. The One Minute Manager. New York: Berkley Books, 1982.

Main, Jeremy. "The Winning Organization." Fortune, 26 Sept. 1988, pp. 50-60.

Naisbitt, John. Megatrends: Ten New Directions Transforming Our Lives. New York: Warner Boooks, 1982.

Peters, Thomas J., and Robert H. Waterman, Jr. In Search of Excellence: Lessons from America's Best-Run Companies. New York: Harper & Row, 1982.

DATA ADMINISTRATION:
What is It, Where is It, How is it Done?

Panelists

Dr. Karen L. Miselis
Assistant Vice Provost
Data Administration and Information Resource Planning
University of Pennsylvania
Philadelphia, Pennsylvania

Dr. Lawrence A. Jordan
Data and Evaluation Administrator
California State University, Los Angeles
Los Angeles, California

Mr. Ronald Hoover
Manager, Data Administration
Pennsylvania State University
University Park, Pennsylvania

Moderator

Dr. Gerald W. McLaughlin
Associate Director
Institutional Research and Planning Analysis
Virginia Polytechnic Institute and State University
Blacksburg, Virginia

Overview

Today we are going to try to help define data administration in higher education by presenting to you three models in different stages of development in three different universities. Each of our three speakers will describe data adminisitration in the following format. They will first present the history of the development of data administration at their own institution. They will then explain how data administration fits into their institution in an organizational sense. Finally, they will explain the nature of their own responsibilities, authority and level of institutional support from their perspective as data administrator. We hope to save some time at the end of our panel presentation for discussion of such issues as the reasons why data administration is differently defined in different universities, the political and finanacial considerations of data administration, awareness of information as a critical institutional resource, and the difficulties of managing the data administration function.

We all agreed that the responsbilities of data administration can be organized in several broad categories. Each speaker will explain to you his or her responsibilities in the following eight areas: information systems planning, data administration policy, the data dictionary, support of institutional research and planning, institutional awareness of information as a critical institutional resource, security and access, training and documentation, and data integrity. You will see that there are significant differences in the role of each data administrator based to a great extent on the culture and organization of the partiuclar institution and its stage of development of information resource management.

University of Pennsylvania

History of Information Resource Management and Data Administration

The University of Pennsylvania began to do planning and thus require management information to support planning as early as 1974. While it became clear almost immediately that the institution's information systems were not adequate for the task, the solution to the problem was not clear.

It was not until the appointment of the Vice Provost for Computing in August 1984, that Penn's computing and information resources were centralized under one leader. While the major reason for the creation of the new position had been to lay down the technological infrastructure for both academic and administrative computing across campus, it quickly became clear that the University's information systems needed significant revision to support the complex planning and management taking place at Penn. At the same time that he devoted resources to the implementation of a campus network, David Stonehill began to develop new information systems within the context of a discussion of information as a critical strategic resource of the University.

That discussion culminated in an important evaluation and planning effort undertaken in June 1987. The resulting document, the Strategic Information Resource Management Plan, published in November 1987, noted the shortcomings in Penn's information systems and recommended a number of changes. Two of the most important recommendations were that Penn organize and maintain closer connections between institutional strategic planning and information systems planning and that there be established an Office of Data Administration and Information Resource Planning.

I was appointed in June 1988. We moved forward with a forceful internal planning process within the Office of the Vice Provost, continued to establish some of the structures and plans recommended in the 1987 document, and recommended further steps in the Information Resource Management Plan submitted to the senior management in October 1988. Effective information resource management at Penn requires major changes in the way that the University has functioned up to now. One of the most important tasks of Data Administration is to support a successful acculturation process in this regard.

Penn's Organizational Structure for Information Resource Management

Penn's information structure has developed over time and is not centralized into one organizational unit. The Offices of Planning and Institutional Analysis and Budget and Resource Planning supply information for strategic planning and decision support to the Provost and Senior Vice President through a variety of reports and research projects. At least half of the twelve schools and many of the centralized functional offices within the University perform their own institutional analysis in a s well. The data base supporting virtually all of this information retrieval and analysis is that of the centralized University Information Systems. The Office of Data Administration is responsible for the planning, maintenance and distribution of all University information in those information systems.

Data Administration reports to the Vice Provost for Computing, Penn's designated chief information officer. University Management Information Systems (UMIS) is responsible for the technical support of the data base, application development, and maintenance of current systems. Data Administration works closely with UMIS in the planning, design and development of new information systems and in the development and enforcement of policies concerning the data dictionary, security, access, system integration and data integrity.

In addition, Data Administration works with a broad circle of information resource managers across the campus to plan new systems and to serve the most pressing University needs in information support. A major portion of our most recent proposal on information resource management involved the development of a new campus-wide committee structure to support the planning of a University data architecture and development of information resource management throughout the University. That committee structure then relates very closely to a newly

defined program and project management structure for the planning, design, and development of new information systems. Each major information system within the University has a custodian responsible for its integrity. That custodian is usually the centralized functional office responsible for the related administrative activities. For example, the Office if the Vice President for Human Resources is the custodian of the data elements in the Personnel/Payroll system. As custodian, that office is responsible for enforcing the policies and standards written by Data Administration.

Data Administration Responsibilities, Authority, and Support

Data Administration is responsible for organizing and supporting information systems planning on a variety of levels. At the highest level, Data Administration provides staff support to the Senior Advisory Group. That groups recommends all priorities in information systems development to the Provost and Senior Vice President. The University Data Administrator chairs the Information Resource Managers Group that meets regularly and provides information and advice to the Senior Advisory Group. Data Administration will also be one of the driving forces on the ad hoc Planning Task Forces established to plan and design new information systems.

The University Data Administrator is responsible for developing, getting approved by senior management, and implementing a wide variety of policies and standards; including those on the design of an institutional data architecture, on the planning of new information systems, on the use of the University data dictionary, on security and access within the University information systems, and on the training and documentation involved in all University information systems.

We are currently establishing the policies and standards for the data dictionary by actually writing the data dictionary for a new student record system to be installed in September, 1989. We are establishing policies not only for the definition of each data element, but also for the entire structure and content of the data dictionary. For example, we will establish that each system and each file must be defined in the data dictionary, that the data dictionary must contain information on which programs use which data elements, and that the data dictionary connect redundant data elements between systems. Most importantly, we must establish the methods by which the data dictionary will be maintained in order to assure its accuracy and usefulness to the community.

In order to support the crucial institutional research function of the University, Data Administration is designing and implementing a separate Management Data Base that will be used solely for ad hoc query by authorized members of the University community. This data base will contain relevant information obtained through the University's operational systems and will offer easy access to users, appropriate security, and user support in the form of a manual for Institutional Research at Penn as well as personal consulting.

Institutional awareness of information as a critical University resource is relatively high at Penn, principally because of the strong support provided by the Provost and the Senior Vice President. Data Administration will extend that awareness through the committee structure, through organized retreats and seminars, and through personal contacts in the schools and departments across campus.

To be effective, the policies for data security and access for so many complex systems must include the description of structures to be used in the administration of security policies, placing a great deal of responsibility in the hands of the custodians of the various systems. The University Data Administrator must have the authority to approve that administration and resolve any disputes regarding security.

Data Administration has the authority and responsibility to ensure the provision of proper documentation, training, and support for all authorized users of University information systems for both operational and analytic activities. The responsibility for the actual provision of the training is shared between the computing resource center and the centralized functional office that is custodian of the particular information system.

Data Administration has the authority and responsibility to ensure that all new information systems are designed to be integrated with existing systems and to improve integration within already existing systems with the long term goal of a completely integrated information base.

Conclusion

It is clear from our time frame that our work at Penn in data administration has just begun and remains to be tested in many areas. We believe that we have reason for optimism, however, because of the very high level of support by senior management as well as the general belief across campus in the need to improve data accuracy, integrity, timeliness, and access. We hope to report a high level of success at this time next year.

Data Administration Within an Information Resources Management Organization

Lawrence A. Jordan, Ph.D.
Data & Evaluation Administrator, California State University at Los Angeles

Panel Presentation: CAUSE88, Nashville, TN.
Data Administration: What Is It, Where Is It, How is It Done? November 30, 1988

Development of data administration at Cal State L.A.

I have titled my talk, "Data Administration Within an Information Resources Management Organization" because I want to emphasize the fact that information and the management of information resources are the primary organizational concepts at Cal State L.A., and that data and the data administration or management of data fall within it: It is the information infrastructure that is being installed at Cal State L.A. that will make it possible to administer the data.

California State University at Los Angeles is one of the 19 campuses of the California State University System. It is a comprehensive, large, urban, multi-ethnic university. It has 21,000 students, of whom 25% are Asian, 25% are Latino, 25% are white non-Hispanic, and 25% are everything else. About 30 percent of our students are graduate students. Over half of our students are attending part time, and over 40 percent of our classes are offered after 4:00 PM. or on Saturdays.

Before there was Data Administration (DA) at Cal State L.A., there was Information Resources Management (IRM), and before IRM, there was Data Processing (DP). We skipped right over Management Information Systems (MIS). In the early 80's, DP operated a diverse collection of computer programs, some of them designed originally to take advantage of the very latest in IBM keypunch card technology, and adapted to read and write 80-column card images to and from tape. It was not a pretty sight. While other institutions were in the vanguard of administrative computing, we were left back in the van.

Major changes began in 1985. Our President, Dr. James M. Rosser, had appointed a blue ribbon committee to study the state of information technology at the University, and this committee concluded that it was not state of the art. One major recommendation of the committee was that the University appoint a Chief Information Officer, a Computer Guru, a Technological Wizard capable of brewing powerful computing potions out of bat wings, newt eyes, chicken entrails, and very little budget. In short, we needed a Vice President for Information Resources Management. Dr. James I. Penrod applied for the job, rolled up his sleeves, and started to work in September of 1985.

A key breakthrough in bringing Cal State L.A. into the 20th century was an innovative research and development project between IBM as the hardware vendor, Information Associates (IA) as the software vendor, and three campuses of the Cal State University. The first part of the project involved installing a new IBM administrative mainframe, and converting our existing student data systems into IA's Student Information System. The second part of the project--the R&D part--involves converting the existing software, which is implemented under VSAM, into IBM's DB2 relational DBMS environment. What IBM and IA get out of this arrangement is the first full-featured student information system that will run in DB2, with Cal State L.A. and the other two CSU campuses as test sites. What the campuses get out of the arrangement is a state-of-the-art student information system, hardware to run it on, superb technical support for the term of the R&D project, and substantial price breaks that have made it possible for us to afford these things.

We have just completed the first year of the project, and have essentially completed installation of the VSAM version of the software--a project that IA recommended that we complete in about 18 months, but which we completed in a rather exciting, challenging, and hectic 12 month period.

Placement of the data administration function within the institution

At Cal State L.A., IRM has two main wings, an academic wing (Academic Information Services) and an administrative wing (Operations), each under an Assistant Vice President. The administrative wing has most of the staff, and operates all of the hardware, including the phone system. (I didn't mention that we installed a new digital switch and a cabling system with a fiber optic backbone last year, in our spare time, to provide the communications network for tying all of our computer systems together.)

Data administration, analytical studies, and institutional research are in a single office on the academic side of IRM, and there is a single professional occupying all three boxes at present. I am that person. This, however, is a temporary arrangement while we are devoting so much of IRM resources to the installation of the new student information system.

Placement of data administration on the academic side of IRM, grouped with institutional research and analytical studies, implies a couple of things. First of all, our main clientele consists of the president and vice presidents, but especially the Vice Presidents for Academic and Student Affairs. Formerly, we had an office of institutional research (IR) that reported to the Vice President for Academic Affairs. With the reorganization of IRM, the IR office was moved over to IRM and the concept of the office was broadened to include analytical studies and data administration. The old-fashioned notion of IR is that it passively monitors institutional data as they fly by--sort of like reading a ticker tape ("Gosh, 200 blocks of IBM traded, up 3/4 of a point. I wonder what that means?". Nobody I know does IR that way, but you know what I mean.) "Analytical studies" implies a kind of proactive IR, so that we attempt to reach out and conduct special studies or analyses to determine what it all means. "Data administration" implies that there is a central oversight of all the data, and that it is aggressively managed to be non-redundant and coherent, with integrity and justice for all. Despite the move to IRM, the analytical studies office still has close ties with the Vice President for Academic Affairs. We currently emphasize research dealing with program evaluation, retention studies, enrollment management, and academic resource management.

A second implication of the fact that DA is on the academic side of IRM is that we are not part of database administration, programming, or operations. As our database administrator puts it, there is a "creative tension" between his office and mine, where we each have slightly different aims, different views of the data, and different territories to protect. The DBA and I have a regular weekly meeting to iron out some of these differences and coordinate our activities during installation of the student information system. As DA, I am not totally dependent on the programming staff for analyses of university data and can conduct independent ad hoc analyses. This provides a kind of check and balance system, so that I can verify the work of programmers. This aspect of the office relies partly on my own training, as a social scientist with a strong interest in statistical computing. I am very comfortable with writing programs to analyze mainframe data, and downloading results of the mainframe analyses into microcomputers for refinements and graphing. I informally audit institutional data for consistency, making sure that none of our first time freshmen are in graduate school, that students are not earning degrees in Undeclared Major, and that the trend shifts we observe are the result of actual demographic changes in our student population, and not merely a function of the fact that a programmer created a bug somewhere or unexpectedly found and removed one. (The DA will establish a formal auditing function, once our data systems are in place and the conversion effort is not consuming so much of IRM's manpower resources.)

Responsibilities, authority, and support of data administration

IRM at Cal State L.A. is an organization in transition. There is much work to do, and it has to be done in phases. As a result, data administration is not as far along as I would like it to be. For the last year, I have been spending at least half of my time on the new student information system project, particularly focussing on data definition and data conversion issues. The OASIS project is managed from a policy perspective by a series of interlocking task forces, which have been quite active and very useful in getting key players talking to one another on a regular basis. (It is ironic, in a way, that the University sought a CIO who would "tell us how to do computing," but one of the main things that he has accomplished is to get us talking to one another. One of his themes is that IRM is not just a new organizational structure that gets grafted onto the university, to conduct old-fashioned business on a bunch of fancy new electronic boxes. Rather, IRM entails wholly new ways of doing business, in which the person-to-person communication must occur more rapidly and fluently than ever before. E-Mail and voice message forwarding are not just cute new ways of doing things that we've always been doing, they allow more efficient and effective communication and decision-making to occur. The media are indeed the message.)

IRM was not built in a day. Now that the student information system is falling into place, it is useful to look more formally at the responsibilities and role of data administration. It is refreshing to be able to look above the data processing trees and talk a little about the shape of the forest. As agreed with the other panelists, I will write about data administration at Cal State L.A. under eight headings:

1. Information systems planning and data architecture design
2. Data administration policy development and approval
3. Data dictionary and encyclopedia
4. Support of institutional research and planning
5. Institutional awareness of information as a critical resource
6. Security and access
7. Training and documentation
8. Data/system integration and data integrity

Information systems planning and data architecture design. My office did not participate in the selection of the hardware and software, but we are clearly beneficiaries of it. One of the main guiding principles in selecting the IA software was that it be an off-the-shelf product with a rational architecture, and not one that we would have to write ourselves or extensively modify.

As the IA system has been installed, however, it has become clear that it is primarily an operational system, with a database designed to support the day-to-day operations of the University. It provides some limited tools for analysis and reporting, but they do not support systematic longitudinal and cross-sectional studies, which are the mainstay of institutional research. Operational and analysis databases have somewhat contradictory hardware and software requirements. Operational databases should be optimized for transaction processing and random-access I/O, while analysis databases should be optimized for number-crunching and sequential I/O. Operational databases are constantly in flux as new data become available and supersede the old. For analytical purposes, however, we need to "freeze" the data at discrete intervals to produce summaries as of the "census date" that occurs each quarter. Having the same system satisfy both operational and analysis needs is a little like trying to have a roomy family sedan that gets excellent gas mileage and accelerates 0 to 60 in 60 seconds.

Over the next year, a major project of the DA will be designing systematic abstracts of the operational database to serve as an analysis database. Another project will be design of a planning database and testing an Executive Support System designed to run with IA mainframe software and selected microcomputer hardware and software. (The specific project, which is funded in part by a grant from Apple Computer, Inc., involves testing the microcomputer side of the ESS on a Macintosh II.)

Data administration policy development and approval. My office develops data administration policy for recommendation to the Vice President for Information Resources Management. Data administration is one element in the IRM strategic and tactical plans.

Data dictionary and encyclopedia. A strong feature of the IA software is an integrated, on-line data dictionary. A user of the student information system can instantly retrieve up parts of the database definition (DBD) pertaining to each data element on every screen, and can also get information by topic or by keying in the data element number. The DBD is also used by the system to validate data values during input and to determine data formats for I/O. DBD entries and changes are initiated by data owners, who are usually in user departments. They are approved by the DA, who reviews them for consistency with other data elements, and by the database administrator, who is responsible for their technical implementation.

Support of institutional research and planning. My office does IR, and we support ourselves as best we can. We have primary responsibility for ensuring the accuracy of data reported to external agencies. Planning is a major personal and professional interest of Jim Penrod. He and the Provost for Academic Affairs coordinate the planning effort for the University, and Analytical Studies often does special studies and analyses in support of planning. Eventually, we want to identify key strategic indicators of the health of the institution--checking the institutional pulse, as it were--so that we can maintain and improve the levels of these indicators.

Institutional awareness of information as a critical resource. There is much awareness of information as a critical resource at the University, but also a belief that information cannot be made available when it is needed. We need to deliver.

Security and access. Physical and logical data security and access are largely controlled by the manager of computer center operations and the data base administrator. As DA, I have inquiry access to all of the University's data. Eventually, the DA will develop procedures for formally auditing the University's computerized data systems.

Training and documentation. Training and documentation are provided mostly by the administrative side of IRM, under the direction of a training coordinator. Documentation of the data elements in the data base dictionary is available on line.

Data/system integration and data integrity. Data/system integration and data integrity are greatly helped by having the IA software. Beginning in January, we will start installing IA's Financial Record System, and in late 1989 will install their Alumni and Development System. Their Human Resources System may also be installed. All four systems have a common look and feel, and ride on top of an integrated database dictionary and data access tools.

Data integrity is made feasible by having a rational database management system that minimizes data redundancy and duplication. However, ensuring integrity is a constant struggle. It begins with quality control of data entry operations, depends on careful and well-documented programming and system development efforts, and requires constant checking and re-checking of data for consistency with past data and screening for wild values and incompatible data combinations. My office is very much involved in testing each quarter's data for consistency and in bringing potential data problems to the attention of the user areas and programming staff.

Thus, we are currently working toward an environment having all of the main administrative data resident within an integrated system on a single mainframe. This has built-in advantages for data integrity. As but as we move to a networked environment, with data and processing occurring on more than one mainframe, data integrity will become more of an issue again. We will also have an analysis database representing census-date information, to complement the operational database. Maintaining data integrity in the analysis database and referential consistency with the operational database will be a major concern of data administration as the analysis database evolves.

Data Administration
at
The Pennsylvania State University

HISTORY

Data administration in the form or policies, procedures and security measures has existed at Penn State for a long time. In 1971 a data management group was formed within the central administrative data processing area to address data management issues from a systems and hardware point of view. With the acquisition of the first major database management system, IMS, in 1974, the data management group evolved into database administration and assumed more responsibilities in the area of data definition, protection and efficient data utilization. The acquisition of the ADABAS database management system and the development of major student systems in 1982 through 1985 created an environment in which more data was available to more users than ever before. This environment led to the creation of a formal data administration function in 1986. The objectives of the function are to manage data as an institutional resource in an accurate, complete, accessible and secure manner. Data administration at Penn State is not empowered in a single person or organization; rather, all units interacting with the system share the responsibilities.

ORGANIZATION

The data administration managerial role is assigned to the Manager of Data Administration in the Information Resource Management group of the central administrative data processing organization called Management Services. The director of Management Services reports to the Executive Director of Computer and Information Systems who in turn reports to the Provost of the University.

The Manager of Data Administration has responsibility for both data administration and database administration functions, and oversees a staff of seven people.

RESPONSIBILITIES OF THE MANAGER OF DATA ADMINISTRATION

1. Information Systems Planning/Data Architecture Design

   The manager is responsible for the design, implementation, and management of physical databases within the administrative data processing area and for coordinating database development or conversion plans with other administrative units.

2. Data Administration Policy Development and Approval

   Develop policies, standards, and procedures to be considered and approved by University executives for the administration of computerized institutional data.

3. Data Dictionary/Encyclopedia

   Responsible for the development, population and maintenance of the data dictionary and for the creation of standards and procedures to access and use the dictionary.

4. Support of Institutional Research/Planning

   Data administration supports institutional research/planning through the coordination of requests for access to institutional data and the identification and definition of data and system resources.

5. Institutional Awareness of Information as a Critical Resource

With the establishment of a data administration function in 1986 the University recognized the importance of information as a valuable resource that must be carefully planned for and managed. The awareness of information as a critical resource has been further enhanced with the creation of official university policies on data security and privacy and the use of computerized institutional data. These policies establish measures for the protection and use of information and must be read and understood by all users of institutional data.

6. Security and Access

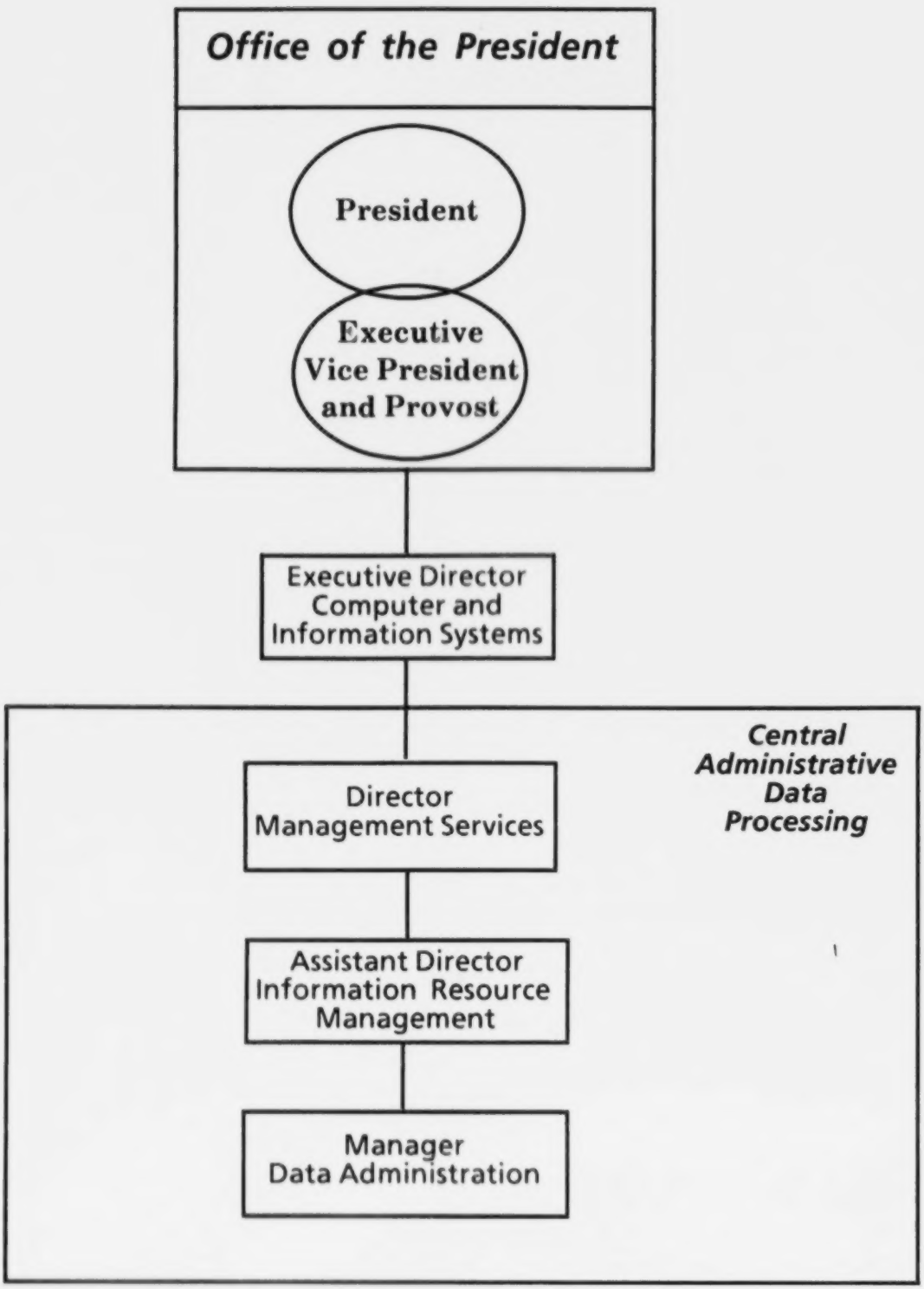
In conjunction with data stewards and other organized administrative groups, data administration develops guidelines for user access to data and processes requests for access to institutional data. The database administration section of the data administration group maintains most of the software used to implement security in the database systems. A separate group within Information Resource Management is responsible for the administration of the security systems.

7. Training and Documentation

Oversee training and communications regarding data administration and provide documentation on university data and the procedures for gaining access to and using data. Documentation is provided in the form of printed documents and online screens.

8. Data/System Integration and Data Integrity

Responsible for assessing the impact of the addition of data and systems into the existing database and for authorizing their final implementation. Through the database administration function, insure sound standards are applied to insure the integrity of the data in the university databases.


Office of the President
President
Executive Vice President and Provost
Executive Director Computer and Information Systems
Central Administrative Data Processing
Director Management Services
Assistant Director Information Resource Management
Manager Data Administration

THE DEPARTMENTAL PLANNING TEAM: A BRIDGE TO THE FUTURE

Cynthia S. Cross
Marianne J. Elser
Jill B. Tuer

OAS Information Center
The University of Michigan
Ann Arbor, MI. 48104-3799

ABSTRACT

When the Information Technology Division was created in 1984 it brought under one reporting line both the Academic Computing Center and the Office of Administrative Systems, two large organizations with radically different missions and organizational styles. The two organizations remain distinct entities, but have undertaken a number of joint ventures and have made conscious efforts to improve coordination of their services and activities.

One of the primary vehicles for coordinating services to faculty and staff has been the Departmental Planning Team, a joint effort of the OAS Information Center and Computing Center User Services. This paper describes the evolution of this group and its activities since the fall of 1986, analyzes the factors contributing to its success, identifies challenges and issues, and discusses the outlook for the future.

THE DEPARTMENTAL PLANNING TEAM: A BRIDGE TO THE FUTURE

I. Why the Departmental Planning Team (DPT) was Created

In 1984, the creation of Information Technology Division (ITD) drew together the academic Computing Center, the non-academic Office of Administrative Systems (OAS), the Merit Network Office, and the Telecommunications Systems Office (UMTel). This consolidation focused attention and resources on planning for and using information technology in all areas of the University.

At the time of this re-organization, the Office of Administrative Systems was also undergoing an internal re-organization, prompted in part by a 1984 Nolan and Norton study which recommended that steps be taken to improve end user access to the data available on the central systems. One result was the creation of an Information Center within OAS. A similar re-structuring at the Computing Center brought a variety of consulting, technical writing, and instructional activities under common management in a new User Services unit .

The arrival of our very own Computer Czar brought not the merger which some had forecast, but a series of "projects" which brought together staff from various parts of ITD to tackle common problems. One of these was the User Services Project. Discussions within the context of this project soon revealed a common concern that Schools and Colleges needed planning support across the range of computing issues and that the University needed to guide unit decisions so that the "Information Technology Enterprise" would be coherent, integrated, and efficient in a highly decentralized environment.

ITD management agreed that departmental planning should become a part of the activities of staff in both the OAS Information Center and the Computing Center User Services division. By the end of 1986 a joint Planning Team had been formed to provide planning support to Schools and Colleges within the University. Its announced goals were:

- To make the best use of the wide range of resources within ITD in helping units become more productive;
- To feed the needs of the departments back into the ITD planning process for new or improved systems and services; and
- To enable collaboration between departments.

II. How the DPT is Organized and Operates

The DPT reports jointly to the Manager of the OAS Information Center and the Manager of User Relations at the Computing Center. On the OAS side, there are four Senior Planners and one Staff Planner. Currently, the Computing Center has two senior planning positions. All of the Senior Planners are expected to spend half their time in departmental planning. The OAS planners devote the other half of their time coordinating

development of administrative systems and related activities, while the Computing Center planners are responsible for user relations with external customers, and identifying service needs for special groups of the Center's clientele. The Staff Planner works on specific projects and assists the Senior Planner from the Computing Center in providing administrative data access for her units. Another OAS Staff Planner will soon be added to assist with data access and documentation. Depending on specific project assignments, all the planners work both individually and as members of teams which may include staff from the other parts of ITD and other units of the University.

To provide liaison and communication, a Senior Planner has been assigned to every unit in the University, academic and non-academic, including the two branch campuses. Electronic mail systems permit inquiries from all over the University to the mail group "ITD Plan," re-enforcing the various announcements that "For information on _____, contact the ITD Planners." Information received from these contacts, and the various consulting and planning projects, is a useful conduit for communication from various constituencies to ITD senior management. These assignments also facilitate the Senior Planners role as intra and inter-organizational troubleshooters. It also means that at least one person in the organization has a vested interest in heading off problems between specific customers and ITD.

III. What the DPT has Done

A. Comprehensive Studies

In the role of consultant, the DPT has produced a number of comprehensive studies for various units on campus. Common elements contained in all plans include extensive reviews of the existing and potential computing activities, hardware and software environments, facilities, organizational structures, and training requirements of each unit.

1. School of Dentistry

The earliest and most extensive study was conducted for the School of Dentistry. In the Fall of 1986, the Dean requested that the DPT assess the current status of all computerized administrative systems within the school and recommend a future direction that would not only enhance these systems but also integrate them with the University's strategic goals for Information Technology. The process for the assessment included:

- interviews with key faculty and staff,
- the development of a computing resource inventory, and
- a review and analysis of the recommendations made by an internal Task Force on Computing.

The planners found this to be an interesting and professionally challenging project. The review of computing support was part of a major review and reorganization of the Dental School in response to changes in the profession of Dentistry. The planners were commissioned by one Dean, but their May 1987 report was delivered to a new Interim Dean and Transition

Executive Committee. Furthermore, while the planners are based in units whose primary function is the delivery of University-wide mainframe computing services, Dentistry maintains an internal centralized computing department to support management of clinic and dental procedure activities. This need to develop plans which include University-wide systems, departmental systems, and individual workstation support has been a distinguishing feature of many subsequent DPT projects.

The planners recommendations included, among other things, the total restructuring of the internal computing department, the purchase of a fourth generation language for clinical applications, and that all microcomputer-based administrative databases be migrated to an appropriate network resource, and be merged with data supplied from the University's Administrative Systems mainframe files.

2. Horace Rackham Graduate School

In the same period, the Horace Rackham Graduate School requested a review of functional administrative areas within the school to identify ways in which enhanced computer support would benefit its operations. Faculty and staff working in the Dean's Office, Admissions, Student Services, Fellowships, and Data Services were surveyed to find out about data needs, current hardware and software configurations, and paperflow and communication processes.

A blend of hardware, software, data access, and connectivity options were recommended along with increased use of the Computing Center mainframe, and better utilization of functions available from the new University Admissions System and data from the Student Characteristics Database. (Both are on the OAS mainframe.) The DPT was gratified to find that the price tag of approximately $100,000.00 for personal computers, printers and connections was seen more as a challenge than a deterrent by the Graduate School's new deans.

3. Museum of Art

The Museum of Art provides another case where a major departmental planning effort in the assessment and recommendation of administrative computing activities took on a slightly different focus. Many of the Museum's administrative activities are in the financial arena, with special emphasis on development and fundraising. Once again, the recommendations included better utilization of databases maintained on the OAS mainframe by downloading information into a Lotus 1-2-3 spreadsheet or a dBaseIII+ database. Again we encountered a local system which needed modernization. One of the Staff Planners on the project spent a lot of time researching possible ways to convert locally maintained data on the "Friends of the Museum" from an obsolete wordprocessing system to a microcomputer database.

The Museum of Art is one of many units on campus involved in the publication and distribution of a wide variety of materials. To what extent should desktop publishing be utilized? Rather than review each item, the DPT presented the Museum staff with a set of guidelines to determine the cost-effectiveness of in-house production and recommended the development of an internal policy based on the outcome of their analysis.

The major administrative function of the Museum is Collections Management, the cataloging, care, and disposition of the Museum's collection. These activities were supported entirely by manual processes at the time of the study. The DPT recommended that the Museum consider acquiring a Collections Management system which could be installed on a Local Area Network (LAN). The LAN approach would enable a number of users to access the information housed on a central file server and pave the way for remote access to this information by students and faculty.

B. Special Projects

The DPT has also coordinated a number of special projects for units on campus. These projects have addressed a variety of computing challenges. A sampling of the projects follows:

1. Division of Research Development and Administration (DRDA)

The occasion for this project was DRDA's request to its new Vice-President for Research for money to upgrade its hodgepodge of terminals, wordprocessors, and microcomputers and provide improved access to computing for its staff. The Vice President requested ITD assistance and a planning team was appointed. In addition to members of the DPT, this team included the Computing Center, and - for the first time - the Center for Information Technology Integration (CITI), the ITD research arm. The University had just received a grant to develop NSF Expres, a system for developing and submitting research proposals in a multi-media networked environment using high-powered workstations. DRDA was expected to be a major user of Expres. It was essential that the equipment plan move DRDA toward that goal.

One of the surprising outcomes of this project was that rather than inching along the path of proven technology, DRDA, in collaboration with CITI, decided to take a major leap forward. It moved all staff to Macintoshes, linked with an Appleshare network, and then used a Kinetics Fastpath Box and Ethernet to connect to the campus network. A Sun Workstation on this network can be a server and an Expres workstation.

2. The Hospital - Data Systems Center Mainframe Link

Once management agreed to establish a channel-link between the mainframes at the Hospital and the OAS mainframe, the technical work was relatively painless. The DPT planner for the Medical Center then faced the non-trivial task of developing and implementing procedures to ensure 'seamless' access to central administrative files by the Hospital community. Issues addressed during this process included:

- revising paperflow and procedures,
- reconciling different security environments and value structures,
- assessing the need for and delivering training, and
- developing and producing a marketing presentation for Medical Center staff.

3. College of Literature, Science, and the Arts (LSA) Pilot

Although the University's new telephone system had provided a new twisted pair cable network for data in 1985, the largest academic unit on campus, the College of Literature Science and the Arts (LSA), had resisted use of the system because of budget constraints. Finally, in 1987 ITD and the Dean of LSA negotiated a "Pilot Project" agreement in which a combination of subsidies and special prices were offered for block orders of connections using the twisted pair plant and UMTel Secondary Communications Processors. ITD also promised one half-time F.T.E. for planning and training.

The planners worked with staff in LSA and UMTel to help departments determine their needs for hard-wired data connections, to provide appropriate training and documentation, and to secure necessary signons and accounts on both the administrative and academic mainframes. Over 400 new connections were installed between September 1987 and November 1988.

C. Local Area Network Planning

The advent of Local Area Networks provided a new arena for the Planners. Here was a technology based on a decentralized yet focused approach to computing that had to be meshed with the strategic direction of the University.

Early in 1986, ITD created a LAN committee to evaluate and recommend transport and software products that would run in the twisted pair environment and satisfy a majority of the diverse networking needs on campus. As the recommendations evolved, the Departmental Planning Team was instrumental in identifying 'pilot' departments to participate in a field test of these products. Moving from pilot to production, the DPT was actively involved in the definition of University support for the LAN products selected and in the design of training programs and materials.

University Hospital was one of the first units to field test the LAN products recommended by the committee. These products include a Northern Telecom Meridian LANStar PC which is a transport that carries data at 2.56MB over twisted pair wiring and the Banyan Vines LAN operating environment. Within eighteen months, the hospital moved from test to production and currently has one of the largest Banyan networks in the country. Two of the major applications on the network are a nurse scheduling system for 1000 FTEs and an Operating Room Scheduling System for 35 operating rooms located in three different hospitals in the Medical Center.

The LAN is without a doubt the fastest growing computing phenomenon currently affecting University departments, and the Planners' involvement has burgeoned accordingly. One of the more challenging assignments was to analyze options for the Housing Division to provide inter- and intra-networking capabilities for Housing administration, residence halls, remote family housing, and plant services.

Recently the process was tested by the need to provide LAN and equipment plans for the Offices of the President, the Vice President for Academic Affairs and Provost, and the Vice President for Finance. The plan was precipitated by a staffing change in each of these positions. The first part of the plan provides for inter-networking; the part of the plan yet to be developed will address intra-networking among all of the Executive Officers.

V. Value of DPT to ITD Central Management

In its short but eventful two years of existence, the DPT has proven its value to ITD central management

1. As a lightning rod in controversy;
2. As a provider of factual analysis in disputes;
3. As a source of information and insights to aid in understanding concerns and conditions in Schools and Colleges;
4. As a bridging mechanism to coordinate services while separate operating units focusing on academic/research and administrative uses of computing are preserved; and
5. As a source of leadership for internal marketing and planning activities, providing input to the planning process for new or improved services and /or public relations activities, to ensure that services will match needs.

VI. Challenges/Limitations of the DPT Approach

It has been obvious from the start that there are challenges and limitations to this approach to planning and coordination. The planners are supposed to help departmental managers find answers to <u>their</u> problems, they are not to "sell solutions." However, helping clients identify and evaluate potential solutions compatible with broader University interests can be very difficult when the overall University direction is something of a diaphanous moving target. And as everyone knows, the evolution of technology proceeds unevenly and can make yesterday's good advice seem pretty stupid in retrospect.

Credibility is always an issue. The OAS planners inherited the traditional love/hate relationship between the central administrative offices and their MIS departments. The University's deans and their staffs have the academicians' distrust of all central administrative units. The planners services are provided without charge, but occasionally one wonders whether School and College Deans and directors of major administrative departments really value a "free lunch?"

The DPT provides advice, not resources. Sometimes the object of the planning activity is to guide the customer to decide what to do with his/her own resources; sometimes we assist in developing plans which are

then used to ask Vice Presidents, Deans, or outside agencies for funds or gifts in kind. In any event, the DPT has at best influence, not control, over the outcome of its activities.

Usually significant work with a department begins with a request for specific help with a problem. Part of the Planners' professional challenge is moving from a single project or report to an ongoing, working relationship. When this happens the Planners become a part of the information loop in the department's day to day activities. At the same time the objective is not to encourage dependence, but rather to foster capability and expertise within client departments. A major goal of the DPT is to move Schools, Colleges, and other departments to the point where they can use more of the ITD systems and services without direct support. This requires that the would-be users commit resources to acquire skills and equipment. Frequently new staff positions must be created or old ones re-defined.

As may have been obvious from the brief history of the evolution of the DPT, not all parts of ITD are accustomed to using a Planner in their project planning and product/service development cycle. Thus there is occasional misunderstanding and some internal resistance to the role of the Planners within ITD. Part of the DPT's challenge has been to demonstrate that the use of planning enhances the chances of success for all the parts of ITD.

VII. Outlook for the Future?

A. Management Issues

The DPT evolved from existing positions in OAS, and from a recognition of a need for such services by the new Associate Director for User Services at the Computing Center. Thus it was not surprising to find that the OAS planners have been faced with conflicting demands from their pre-existing responsibilities for planning corporate systems, providing access to corporate data, planning and implementing enhanced overall systems and services for users, and providing general support to central administrative offices. These demands are increasing. The Computing Center's participation in the planning process has waxed and waned as staff turnover and other hot items have demanded attention. Their current Planner is heavily involved in user relations and in planning for enhanced services to the academic comunity. The Computing Center is recruiting another Planner, and the list of internal Computing Center projects awaiting that person is substantial.

Demand for departmental planning services has always exceeded supply, and has been exacerbated by the unpredictability of large requests from highly placed customers. The number of requests have been increasing both in quantity and scope. As understanding of the work and role of the Planning Team spreads some of these problems may lessen. The Planners' managers are working to increase the staffing of the DPT as well as to better manage the workloads of those currently involved. There is a move

toward greater use of matrix management and a team approach to control Planners' workload as well as an attempt to expand the lead time for making assignments. It is also important to foster working relationships and planning activities with those responsible for information technology at the college or division level. These efforts will undoubtedly continue to require close management attention. The Planners and ITD managers will also have to work to reinforce - and sometimes build - the bridges between the service providers and the users. Here too, acceptance and use of appropriate matrix management techniques will be required.

B. Support for Information Sharing, Policy setting, and Need Identification Mechanisms

It did not take long for the Planners to become aware of the various short circuits in the flow of information both within ITD and between ITD and the rest of the University. Communication channels within ITD that ensure that the Planners are aware of directions, decisions, and services is critical not only for the credibility of the Planning staff but for the success of the overall concept. The rapid pace of technological change coupled with the overall size and complexity of the ITD organization makes it a challenge to achieve effective communication.

Information sharing, policy setting, and need identification mechanisms are slowly being put in place and the role of the Planners in them is gradually being clarified. For example, an 80-member Information Technology General Council was established in the Spring of 1988 to improve communication and provide a forum for discussion among faculty and managers from the principal academic, research, and administrative units on campus. Planners are the liaison between ITD and Council members.

C. Changing Nature of Relationships

The nature of the relationships between the Planners and the departments is changing as the internal departmental structures for computing services mature. Initial contacts with departments ranged from requests for unit wide plans to the minutiae of access to a particular administrative application such as Online University Stores Requisitions. As these departments build internal expertise the Planners role is becoming that of "bridge builders" to ITD systems and services, such as LANs, network connections, development of new administrative systems, etc.

D. New Systems and Services

The Planners are also part of efforts to identify operating level contacts for ITD divisions to work with in providing support services and training, and in defining new service needs. In this role they frequently operate at the leading edge where the definition of ITD systems and services occurs. An excellent case in point is the support for departmental systems. In a climate where technology permits and, of

late, is encouraging decentralization, the Planners have become increasingly aware of the need to redefine for the institution what is a "corporate" system and what is a "departmental" one.

While central systems have long had standards and guidelines, departmental systems have been born - and have often died - in a laissez-faire environment where the same sad experiences are repeated over and over by departments. The Planners have been in a position to see the need for ITD to define standards for development of departmental systems and to encourage their adoption by training and support for departmental staff. They have also seen the need for a contract service for systems analysis and even system development for departments which do not have in-house expertise. This is just one example of the issues confronting ITD as it re-defines what it will provide centrally, and what it expects departments and users to do for themselves.

E. Expansion to Include Planning for Academic and Research Activities as well as for Network-Wide Services

As the Computing Center's participation in the planning effort matures and solidifies, the overall planning effort should expand to include more of the academic and research activities. This will probably not include direct instructional activities, but rather such basic service issues as planning for the transition from the MTS operating system to Unix. It is also apparent that the Planners' expertise and knowledge of user needs will play a part in development activities managed by CITI. CITI is involved in a number of joint development projects with vendors and vendor support is increasingly being looked to as a source of funding for our activities.

Our Vice Provost for Information Technology, Douglas Van Houweling, has said that he expects ITD to become the "backbone" service provider for the University. Efforts are already underway to install the networks and to define the various information services that will be provided. Implementation of "the vision" may make ITD less visible to the end user and could raise serious problems of justifying budgets when asked "but what are you doing for me?" The Planners will be of increasing use to ITD as a visible link between the ITD backbone and the end users, maintaining the visibility of those background facilities which link all the individual users and services together.

VIII. Summary

In the late 1800's, Robert Louis Stevenson said, "Wherever we are, it is but a stage on the way to somewhere else, and whatever we do, however well we do it, it is only a preparation to do something else that shall be different." Those of us involved with information technology today recognize that we are involved with constant change and must make decisions today that will "bridge" us to the future. The Departmental Planning Team is helping provide this bridge at the University of Michigan.

THE TRIALS, TRIBULATIONS, AND TRIUMPHS OF ESTABLISHING AND MAINTAINING AN INFORMATION CENTER IN A MULTI-CAMPUS COLLEGE DISTRICT

ANITA ADAMS

MANAGER OF INFORMATION RESOURCE CENTER

DALLAS COUNTY COMMUNITY COLLEGE DISTRICT
DALLAS, TEXAS 75150

About four years ago, our District realized that employees had discovered the wonderful world of personal computers. Rather than permit the disjointed purchase of software and hardware to continue, (there were no established guidelines) our executive staff, through our Strategic Planning Committee, formulated a four year action plan. This action plan addressed many areas of our organization, one of which was the support of end users in the data processing area. To better understand their commitment, we hired an Office Support Consultant to conduct an extensive study. The development and implementation of the Information Resource Center of the Dallas County Community College District is a direct result of this study.

This presentation covers the planning process, the implementation, and the operation of this center.

BACKGROUND

The Dallas County Community College District (DCCCD) is composed of seven campuses, a Career Training Center, and two District offices.

The campuses and the Career Training Center operate in many ways as separate entities with their own President and Vice Presidents. The overall District is governed by a Board of Trustees with our Chancellor reporting directly to them. Under the Chancellor are two Vice Chancellors. The Vice Chancellor of Education is responsible for all areas of the District directly related to educational affairs. The college presidents report to this Vice Chancellor. The Vice Chancellor of Business Affairs is responsible for overseeing all areas of the District related to business operations.

We have a centralized MIS department, Information Technology, which resides under the Business Affairs area. The Information Technology department is responsible for all district communications which includes voice and data, Administrative and Educational computing, and end user support.

Each District location has a Data Processing Coordinator, who is the liaison with the Information Technology department.

The Information Resource Center (IRC), a department within the Information Technology division, is responsible for end user support. We officially opened for business on January 2, 1986 charged with the responsibility for the education and support of all District and Campus personnel in Administrative and Office Systems.

OFFICE SUPPORT STUDY

In 1984 a consultant firm, T.H.E., was hired to perform an office automation requirements study for the Dallas County Community College District. The study was conducted using the Data Processing Coordinators and selected user personnel from each campus and the District offices as the study group. The study included:

- users' evaluation of the support currently being provided in the area of data processing and office systems by the Information Technology department.
- user perceptions of their office information systems needs, as well as their perceived future needs, and
- what the users would like accomplished as the end result of the study.

The findings which resulted from the study indicated the following:

Information Technology Support

The perceived need and most requested service from Information Technology was education and training. The need took the form of "information resource awareness and education for the District;" "let us know what's possible;" "system awareness of software;" "provide office systems consulting;" "provide micro education services."

Perception of Office Automation and What it Should Do

Integrated office support software networked across the District was the needed direction that was emphasized by the users. The following list indicates order of popular perceived needs:

- o Electronic Mail Network
- o Scheduler Package/Electronic Calendaring
- o User-friendly word processing
- o Tickler Files
- o Reminder Aids

Desired Study Results

The desired results of the office automation study fall into the following areas.

- o Provide greater end user education in office systems, personal computing, and administrative systems.
- o Provide direction in networking present and future installed technology.
- o Provide electronic mail and document distribution capability and greater communications potential.
- o Provide easy accessible problem resolution assistance.

The consultant's recommendation was centered around the creation of a district office with the responsibility for end user support and the purchase of an integrated office support system. The recommendation was presented to our Board, which subsequentially approved the proposal. Thus, the Dallas County Community College District's Information Resource Center was born.

IMPLEMENTATION

Writing this paper has given me the opportunity to vividly recall a year of my life with experiences that I wouldn't have wanted to miss, but would never willingly go through again. These memories explain why I immediately thought of "The Trials, Tribulations, and Triumphs of Establishing and Maintaining an Information Center in a Multi-Campus College District" as the title for the paper.

The "Trials" started immediately in the form of maintaining my current position responsibilities (user support and writing Administrative systems user documentation), assisting in the vendor selection of an integrated office support system, finding a location for the center, writing job descriptions for the center's staff, and interviewing and hiring the staff.

The selection of a vendor to supply the integrated office support software was deemed to be the first priority by Jim Hill, the Director of Information Technology. He chaired a selection committee which was composed of the Director of District Purchasing, and three secretaries, one from a District office and two from campuses, and me.

We spent what seemed like forever, but in reality, was a period of about three months evaluating office support software. We had developed a check off list of the features essential for our needs. Each committee member completed the check off list during the vendor presentation. This means of retaining our opinions of the software and vendor support proved invaluable. After seeing four or five vendor presentations your recall of particular systems is almost nil. At the end of the evaluation period we tabulated the check off lists, eliminating all but two of the vendors as being unable to supply all of our required features.

The next step was the bid process. We were fortunate that both desirable vendors submitted bids. The ultimate selection of Data General as our vendor was based upon financial considerations.

FACILITY DESIGN

With the selection of a viable office support vendor completed I was able to concentrate on a facility to house the center. In this I was fortunate in locating an area of the District Service Center which at the time the building was constructed had been earmarked for a Centralized Printing Facility but had never been used. Working with a District architect the center was designed not only to meet current needs but with the potential for future growth. The center is composed of:

- Reception area, room for storage of documentation manuals and training material.

- Two classrooms, one equipped with 10 PC's connected to the ISN network and one equipped with 10 TELEX terminals connected through a controller to the AMDAHL administrative computer. The classrooms are separated by a room to house media equipment.

- Office space to house up to three trainers.

- Private office for the Micro Specialist.

- Private office for the Administrative Services Coordinator.

- Private office for the manager.

The IRC moved into the new facilities in August of 1986 after operating out of temporary facilities for seven months.

ORGANIZATION

The IRC is a part of the Information Technology department with the Manager reporting directly to the Director of Information Technology. The center is staffed by six full time employees and one student assistant.

Manager Information Resource Center
Responsible for the overall management of the department.

Secretary - 1
Responsible for our registration system, which includes maintaining the Course Master file, Staff Profile file, Class Schedule file, registers staff in classes, sends confirmation notices, class rolls, enrollment reports, and maintains inventory of training material. She also serves as receptionist for the department and assists with phone coverage.

Administrative Services Coordinator - 1
Responsibilities include liaison with the campus Data Processing Coordinators in problem resolution and maintains Administrative System user documentation manuals,

Micro-Computer Technical Specialist - 1
Consultant for specifications and configuration of microcomputer equipment and configuration of software packages. Evaluates and recommends new products and assists in staff training.

Software System Trainer - 2
Develops training material and teaches classes in all supported microbased software, Office Support software, and Administrative Systems software.

Student Assistant - 1
Assistant to the secretary.

COURSE CURRICULUM

Our course curriculum is divided into two areas, Administrative Systems and Office Support Systems.

Administrative Systems include all computerized support of the administrative functions of the District. Administrative System classes currently taught are:

Human Resource System
Personnel/Payroll
Job Placement System
Student Employment Agency
OPERA System
Purchasing
Accounts Payable
Schedule Build System
Development and input of Class Schedule and its relationship to the instructors load.

Office Support Systems include all computerized office function. Office Support classes currently taught are:

Comprehensive Electronic Office System
CEOWRITE (wordprocessing)
E-Mail
E-Calendar
E-Filing
Resource Scheduling
Telephone Message Routing
Reminders
To-Do List
Spread Sheet (LOTUS)
Data Base Management (Power Base)
Introduction to the PC
Managing a Hard Disk
STARLAN Network

All course training material is developed in-house by the IRC staff. In most cases, classes are taught by the IRC staff, but do utilize pertinent campus and district personnel as their schedule permits.

REGISTRATION SYSTEM

Using Power Base, we have developed a system for registering staff in classes patterned after the DCCCD registration system. The system includes a Course Master file which contains a course description, prerequisites, class length, and identifying sequence number for all available courses. A Staff Profile file which contains the social security number, name, location, phone number, and level of experience of each employee attending classes. A Class Schedule file which contains the Sequence Number, Section Number, class date and time, Social Security number of each employee enrolled, and a code for each employee denoting completion status.

When we began operations, registration was handled through the interoffice mail. As soon as a majority of the employees had been trained to use the E-Mail we established a "Registration Mailbox" so that the registration could be accomplished electronically. The secretary also uses the E-Mail to send a confirmation notice to the employee.

A staff training schedule is produced for each semester. This schedule contains a detailed list of time and date for each class being offered. The course description, length, and prerequisites for each offered class is also included. We use the E-Mail to send the training schedule to all employees along with a limited number of hard copies for each district location.

SCHEDULING

I would like to be able to tell you that we developed a foolproof way of scheduling staff training classes, well it just "aint" so. We learned by trial and error the hard way. Don't schedule classes Monday morning or any time on Friday if it can be avoided. Try to limit each class to no more than four hours. We accomplished this to a great extent by dividing classes into an introduction, intermediate, and advanced sections.

I started publishing a class schedule each month which enabled us to check the previous months enrollment and adjust the schedule based upon demand. This system works very well for the IRC but doesn't always give the employees sufficient time to adjust their schedules to include class attendance. I have therefore gone to a semester schedule. This requires more planning time for the staff of the IRC but has been favorably received by the District staff.

The most important thing I have learned about scheduling staff training classes is to be flexible. Don't hesitate to adjust your schedule to meet the demand and leave yourself some time to accommodate the emergency situation that seems to arrive at least once each month.

OPERATION

After almost three years of successful operations the IRC has been an integral part of the implementation of three new major systems in the District; Human Resource System, OPERA System, and the CEO System. I feel comfortable in saying 'successful' in that all employees received their paychecks, and we have managed to purchase all required goods and services and pay for them. I seriously doubt that there is any employee in the District who, at some time each day, doesn't use the E-Mail portion of the CEO System, and, most important, my contract was renewed in September.

Statistically speaking we have taught an average of 102 employees each month during 1988 and average responding to from fifteen to twenty request for problem resolution each day.

EXPANDED CURRICULUM

A co-worker once told me I would never be able to go back and develop training classes for Administrative Systems which had been implemented before the IRC existed due to the number of new systems and rewrite of existing systems that would be implemented. With the advantage of having an excellent staff behind me, my reaction to this statement was of course I can go back and go forward with the new with no difficulty. I was wrong. Developing good training material and writing good user documentation requires an inordinate amount of time even for excellent staff.

We have managed to keep up with the new and spend every available hour working on the backlog. During the Spring 89 semester we will be offering classes in the Student Records and Registration area, which is a part of the backlog. This class is being developed with the assistance of a campus Registrar and Director of Business Operations and will encompass much more than teaching the staff to use the computerized system. It will include Admissions and Business Office procedures and how they relate to the system. I also hope to include, as applicable, how these offices are supported by our Office Support Systems.

We are also expanding the curriculum to include taping class, both as video and audio. This would allow us to address two of our greatest problems, reinforcement, and training new employees immediately rather than forcing them to wait for the next scheduled class.

ISSUES OF CONCERN

Once I accepted that we couldn't please all the people all the time, I was able to develop a more realistic view of concerns. The top of this list has to be staffing. The IRC is currently understaffed by a minimum of two people. There is always more work to do than our staff is capable of doing. This in turn causes the next concern which is also staff related, burn out. It's difficult to maintain a positive enthusiastic attitude when you are over worked with no hope of ever getting caught up.

CONCLUSION

In conclusion, establising the Information Resource Center has been the greatest learning experience of my life. In this I was fortunate to have had Jim Hill, Director of Information Technology, as my mentor. I also think our success is directly related to the organizational structure of the District, which places the Center as a part of the MIS department. Without the cooperation and support from the other two areas of our department; Computer Services and Communication Services, we would be unable to maintain the current level of service to the end users.

The "Trials" and "Tribulations"; not enough staff, mammoth work load, and unending user problems and complaints are overshadowed by the "Triumphs". The employee who comes to class apprehensive about the new system they must learn; who upon leaving the class at the end of the day smiles at you and says "This is easy, it's not near as bad as I thought it would be". Or the secretary that stops you in the hall to tell you how much easier her job is now with the Office Support training she has received in class. These are the things that keep the staff of the IRC coming back day after day.

PUTTING THE "SERVICE" BACK INTO COMPUTER SERVICES:
Organizing computing for the effective delivery of services

The University of New Hampshire - A Case Study

Betty Le Compagnon
University of New Hampshire
Durham, New Hampshire

John F. Leydon
George Kaludis Associates, Inc.
Nashville, Tennessee

With the increase in library automation, administrative information systems, and networking, many educational institutions are reorganizing in an effort to better manage computer resources. Formerly separate functional units such as academic and administrative computing, telecommunications, and the library are being combined under a chief "information" officer. This paper presents a case study of the reorganization of computing at the University of New Hampshire in July, 1987. Unlike institutions which are combining formerly separate units, the University of New Hampshire split its computer services department into two separate organizations. The conclusions to be drawn from the success of this reorganization will serve as guidelines for institutions considering reorganization.

Change is thus the major certainty about the environment with which the University System of New Hampshire must plan to deal effectively.

Change, driven by the incessantly evolving forces of science and technology, will continue to be the dominant feature of much of life as we move closer to the 21st century.

--**To Serve New Hampshire: A Strategic Plan**, October 31, 1987

The role of technology in higher education has changed dramatically over the past several years. We are seeing a rapid proliferation of computers in American institutions of higher education. In particular, the growing availability of personal computers has created a new, more sophisticated computer user with increased expectations for service from the computer services department. The question we must therefore ask ourselves is: given the rate of technological change, how do we organize computing on campus to take advantage of new technological opportunities and, at the same time, continue to satisfy users? The answer to this question, we believe, lies in organizing, not only to deal with changing technology, but more importantly, to deal with changing user needs.

Traditionally, the organizational stucture of computing has been governed by technological developments. In the 1960s, given the large mainframe computers, computing was centralized under the computer center director who was, essentially, the custodian of the machines and data. The director's staff consisted of programmers and machine operators, and the business of the department was related to programming and other technical work. The successful delivery of services was measured mainly by the operational efficiency with which jobs, such as payroll, were run. There were very few users as we know them today outside the computer services department itself.

In the early 1970s, with the influx of smaller computers on campus, a number of departments developed technical computer users who could write their own code. As a result, the notion of "service" in the computer services department expanded to include problem solving for these new end-users. Most computer services departments were still organized to manage their mainframe computer centers, however. For this reason, the additional service needed by users in other departments was tacked onto the job of the traditional administrative programmer. These new end-users wanted access to data and technical information, and this went against the administrative programmer's role of guardian and protector of the institution's data. It also went against the belief on the part of computer center directors that centralization allows for more effective management and control. As a result, these new users were often poorly served by the computer services department.

In the late 1970s and 1980s, the growing availability of microcomputers has created a new type of computer user, one that is often non-technical. These new users do not know exactly what they need from the computer services department. What they *do* know is what they need in order to be effective in their jobs. Because they are sensitive to institutional objectives and to differences within and across departments, their tendency is to look to the computer services department to provide "solutions" to a broad array of ill-defined institutional, deparmental, or individual problems. In response to these new users, computer services

departments have added microcomputer support to their lists of services. In some cases, the same administrative programmers who support mainframe computers have been asked to develop microcomputer expertise so that they may provide service to both types of users. In other cases, separate microcomputer support groups have been formed to address the needs of microcomputer users. In both cases, however, the emphasis has been on providing technical solutions to isolated problems and not on addressing the overall needs of the user. Thus, the user's perception of the "service" provided by computer services departments remains negative in many institutions of higher education.

Is the user, especially the non-technical user, in the best position to dictate what services should be provided by the computer services department? With the rate of technological change and the convergence of technologies, isn't the computer services department in a better position to understand which product and service choices are best ? We believe that the successful delivery of service by the computer services department depends on an organizational structure and set of objectives which integrate the opportunities offered by technology with individual, departmental, and institutional goals. To do this requires a clear understanding of both the major trends in information technology and the institution's short- and long-term goals.

According to market analysts, the 1990s will continue the trend toward distributed computing, with large central information databases accessed from powerful workstations connected to national and international networks. There will be a proliferation of local area networks within and across departments and, as a result, a need for increased standards in microprocessor architecture, operating systems, and networking. A more challenging economic climate will create a growing pressure to justify investments in computing, and it will become increasingly difficult to find or afford the computing staff necessary to maintain equipment and provide consulting for users. More applications will be developed by end-users on microprocessor-based systems using fourth generation languages to access relational databases. Systems integration will be one of the major challenges facing both vendors and computer services departments. Finally, more sophisticated users will have even higher expectations from the computer services department, demanding more computing power, additional capabilities such as graphics, text processing, image scanning, and prompt, if not instantaneous, response to requests for service.

For many directors of computing, these predictions may seem to point to a more centralized organization and control of computing in which concerns such as protection of data and standards allowing for compatibility between systems can be addressed. It is obvious that careful planning at an institutional level is necessary if we are successfully to implement a campus-wide network of distributed computing facilities which will appear, to the user, to be one large computer. In addition, a centralized organizational structure will not be perceived by the user as service-oriented. Yet, the users are the reason institutions have computers and employ computer people in the first place. There is, therefore, something wrong with the organizational model of computing which looks only at trends in technology. We must also look at the goals of the institution, together with departmental and individual goals.

Strategic Goals

The University of New Hampshire is the largest of three campuses which make up the University System of New Hampshire. The University of New Hampshire's strategic plan has as a principal goal to be an excellent, nationally-recognized university. Excellence, as stated in the plan, is evidenced by high quality in an institution's programs. National recognition is based on the scholarly accomplishments of faculty and students and the reputation of academic

programs. To achieve these broad goals, UNH's strategic plan has a focus on improving instruction, providing increased support for research, enhancing university resources, and developing interdisciplinary and international programs.

Goals like these have led many institutions of higher education to recognize the strategic importance of computing. Computing can help improve instruction, is essential to research, can provide widespread access to university resources, and can give an institution a competitive edge by helping to attract better faculty and students. It is therefore not surprising that the strategic plans of leading universities often include, as part of the steps outlined to meet stated objectives, elements such as: computer-aided-instruction (CAI) programs to support teaching and learning, networking to provide better access to university resources and off-campus supercomputer sites for researchers, library automation, and programs to implement computing across the curriculum. Similarly, many of the steps outlined to support departmental and individual goals as set by these institutions include computer-related activities.

It is within the context of institutional goals and major trends in information technnology that an institution must determine the organizational structure of computing that will allow it to best serve the needs of users. In addition, a number of internal factors affecting organizational structure must be considered before deciding how to organize and manage computing on campus. These factors, which will differ from institution to institution, should be considered before deciding an organizational structure:

- the relationship of central to distributed computing services in the institution as well as the management of, and responsibility for, distributed services;
- the mix of mainframes, minicomputers, microcomputers, workstations, and supercomputers;
- the institution's networking strategy;
- funding issues;
- the decision-making process for computer-related activities and purchases;
- the reporting level of the department;
- the relationship of computing to other departments such as: telecommunications, media services, printing and publications, the library, and institutional research.

Information about each of the above factors must be taken into account in decisions about how to organize and manage computing on campus. The effect that each factor will have on the organizational structure will depend on an institution's particular circumstances.

Computing at UNH

Historically, traditional principles governed the organizational structure of computing at the University of New Hampshire. From the days of the first mainframe computer locked inside a glass-enclosed machine room in the Science and Engineering Building, there was always a strong belief that centralization allowed for more effective management and control and that the "real business" of the computer services department was running production jobs and ensuring control and security. Any opportunities or problems related to computing were seen as "technical." As such, they were beyond the understanding of anyone outside the computer

services department, with the possible exception of the computer scientists who were considered allies in the early days of computing. Given this view of technology, it is not surprising that all of the computing functions for both the University of New Hampshire and the University System of New Hampshire were organized under a single Executive Director of Computer Services. This director of computing reported to both the President of the University and the Chancellor of the University System and was responsible for making all computer-related decisions for both the University and the University System.

The original computer services organization was made up of three types of people: computer operators, systems programmers, and administrative, or MIS, programmers. The job of this organization was to keep the machines running, to meet deadlines for payroll and other administrative applications, to solve technical problems as they arose, and to ensure the security of data. The long-range goal of the organization was to acquire larger, more powerful hardware so that more jobs could be run faster.

As the research function developed at the university, a need for additional computing power and for a different kind of computer expertise arose. The computer services department, however, with its traditional view of computing, did not immediately recognize this need. As a result, a group of UNH graduates formed a private organization outside the University to provide consulting support to the University's research community.

As more and more academic departments began to recognize the benefits of computing for instruction and research, there was a new need for technical support and services for academic users. Once again, this need was not recognized by the computer services department. As a result, the Office of Academic Affairs put together a small group of computer knowledgeable individuals whose job it was to act as computer consultants for academic users. This group, known as the Academic Services group, reported directly to the Office of Academic Affairs, and thus, like the research computing group, was separate from the computer services department.

The people in both the research and academic support groups were different from the traditional computer services "techie." Many of them had themselves used computers in research or teaching and several of them had PhD's in academic displines other than Computer Science.

Eventually, due to the director of computing's underlying belief in the importance of centralization for effective management and control, the research and academic services groups were incorporated into the larger Computer Services organization. It is interesting to note, however, that the existence of the two support groups grew out of a user-defined need that was not being addressed by the computer services organization with its traditional view of computing. The consolidation of the two service groups into the larger Computer Services organization, on the other hand, did fit in with this more traditional view of computing.

In 1986, the organizational structure of computing at UNH was still governed by the principle that centralization allows for effective management, control, and security. The Executive Director of Computer Services still reported to both the President of the University and the Chancellor of the University System. The Computer Services department consisted of five groups: computer operations, technical services, administrative programming, research computing, and academic services. Many users, however, did not feel that their computing needs were being met. They often made comments about the inability to get "service" from Computer Services. The problems, as they saw them, were many. Instead of solutions to problems, they got technical jargon and instructions on the proper way to request jobs from the

computer services staff. They could not get access to the information they needed in order to be effective in their jobs. As they became more sophisticated computer users, they were not given the flexibility, freedom, and independence they needed to develop their own solutions to problems.

User dissatisfaction was growing. At the same time, there were problems with the implementation of an automated financial accounting system which was to be used by all campuses in the University System. These events, led key administrators of the institution to question the overall organization, management, and delivery of services of Computer Services. In the fall of 1986, the consulting firm of George Kaludis Associates, Inc. (GKA) was asked to evaluate computing at the University and to make recommendations as to the organizational and management structure which would ensure effective delivery of services to the entire University community.

Reorganizing to Deliver Services

The report submitted by GKA recommended the division of the existing Computer Services organization into two separate entities. After extensive on-site investigation, which included interviews with all segments of the University System community, GKA concluded that the needs of all users--whether they be academic or administrative, on the UNH campus or part of the larger University System--would be better served by two separate organizations. Several findings lay behind this conclusion. GKA had determined that the poor implementation of the automated financial accounting system was due, in part, to a plan that lost direction because of an organizational structure and way of doing business which did not ensure necessary communication and accountability. In addition, the dual reporting structure of the Computer Services organization had required the executive director to answer to two "bosses," who often had differing agendas. Finally, as the user community grew, the differing nature, and therefore needs, of the academic and administrative users had not been recognized by a computer services department that was organized along traditional operational lines with the primary purpose of reducing downtime to make production deadlines.

With the approval of the President of the University and the Chancellor of the University System, Betty Le Compagnon, then acting director of the organization to be called University Computing, and John F. Leydon, then acting director of the organization to be called USNH Computer Services, worked to created two separate organizations which would be better able to deliver services to their respective user communities. The USNH Computer Services organization was given responsibility for all large, integrated, mainframe-based administrative systems to serve segments of the University System; its executive director reported directly to the Chancellor of the University System. The University Computing organization was given responsibility for all academic and research computing on the UNH campus. In addition, because of the nature of microcomputing and the similarities among administrative and academic microcomputer users, it was decided that all microcomputer support, for both academic and administrative users, would be provided by University Computing. Since University Computing would serve mainly the academic and research interests of the University, it was decided that its executive director would report to the Vice President for Academic Affairs on the UNH campus.

The resulting organizational structures (see illustration 1) grew out of a strong belief on the part of both acting directors that the primary emphasis of any computer services organization must be on service, and that the goal is to increase user satisfaction. Each of the new organizations, therefore, added a new group with the primary responsibility of providing the best possible service to users.

In order to be successful, the new service groups needed to understand their "customers." The creation of two separate organizations had, in part, been founded on the belief that the nature of administrative computing is vastly different than that of academic and research computing. This can also be said of administrative and academic users. Administrative users come from all segments of the University. An administrative user may be a secretary, an accounting clerk, a librarian, or a vice president. Often, administrative users' knowledge of computers is extremely limited. What administrative users do know is what they need to do their jobs effectively. They know what information they need, and they know when they are not getting that information. They do not see their information needs as being related either to technical problems or to the limits of a particular system. Faculty and researchers, on the other hand, are often highly sophisticated computer users. While they may understand the limits of computer systems and the inevitability of technical problems, they expect prompt solutions to these problems.

The people chosen to be part of the two service groups--Customer Services in USNH Computer Services and the User Support Center in University Computing--had to have a clear understanding of the differing personalities and needs of administrative and academic users. In addition, since these groups were the "first stop" for users, these people had to have a clear understanding of the services provided by their organization and have sufficient knowledge about these services to answer users' questions. For example, staff members in the User Support Center of University Computing might be called on to answer questions related to such diverse topics as: getting an account on one of the mainframe computers, using the University's scanning service, repairing a microcomputer, or using WordPerfect. Finally, two of the most important personality traits needed by the staff of these two groups are understanding and patience. As with any service organization, the staff of these two groups must always try to understand and sympathize with the customer's point of view. If this is impossible, they must remember that "the customer is always right," since, it is our belief that the proper training, consulting, and communication will prevent most customer dissatisfaction.

Because of the importance of training, consulting, and communication to user satisfaction, these areas have important roles in each of the organizations. And, it is important that the strategies developed for training, consulting, and communication recognize the differences between academic and administrative users. Because administrative users tend to be less computer literate, training and consulting for these users must take an easy-to-understand, step-by-step approach. A classroom environment may work well for administrative users who will be using systems in similar ways, since they will then have the names of "classmates" to call with questions. Faculty tend to be more computer literate or, at least, to think of themselves as more computer literate. For this reason, they are often unwilling to admit they do not already know how to use a computer or a particular software package. A one-on-one teaching environment may therefore work better with academic users. Another learning environment which is attractive to the more sophisticated academic user is a faculty software library where faculty may sit down by themselves, try new software, and ask for help when they have a problem. These few examples should point out the need to tailor training and consulting to the needs of the user.

For a service organization, training, consulting, communication, and a customer orientation can be considered the "marketing" strategies of the computer services department. A number of important premises lie behind the successful implementation of these strategies. The first premise is that there is no such thing as too much information on available services. In both USNH Computer Services and University Computing, a great deal of emphasis is placed on communicating with users about available services. Communication may take the form of

one-page flyers, brochures, newsletters, articles in campus newspapers, special mailings, one-on-one training, short courses, seminar series, open forums, or conferences. The form of communication chosen depends on the characteristics and the needs of the audience to be reached. Usually, a good rule of thumb is that anything you want people to know about should be communicated at least three times, in three different forms.

The second premise is that successful written communication depends as much on form as content. In an age where an overabundance of the printed word threatens to render it ineffective as a means of communication, a document must be attractive and easy to read, with a purpose which is immediately evident, if it is to have any chance of communicating effectively to its intended audience.

A third premise underlying these marketing strategies is that ease of access to computing is critical. "Ease of access" may simply mean providing adequate information to users about computing on campus. It may also mean simplifying procedures for obtaining accounts on mainframe systems or redesigning scanning request forms to make them easier to fill out. On a department level, it may mean creating workshops on using electronic mail, then following up with weekly electronic mail messages containing information of interest to the department staff members. At the University level, it may mean creating MS-DOS or Macintosh users' groups so that users can share solutions to common problems or undertaking a year-long coordinated effort to introduce a new student information system to the University community through a gradual education process, including such activities as forming committees to encourage user involvement, holding regularly scheduled meetings, conducting hands-on workshops, distributing monthly newsletters, and reporting on progress on a regular basis.

A final premise underlying the marketing strategies of computer services departments is that technological obsolescence must be planned for with extensive user involvement. Since most users believe that if the system works, you shouldn't change it, and that when you do change things, they never work as well as they did before, they may not understand why a given computer application which works well on one computer system must be converted to run on another. The fact that the original machine will no longer be supported by the vendor, that the maintenance costs are five times that of newer systems, and that the power and space needed for the system far exceed that of newer machines, is of little importance to users. Users also will not understand why you want them to change from a microcomputer which uses CP/M as its operating system to one using MS-DOS, or from one version of a particular software package to an updated version. As long as they have what they need to do their job, technology is of little importance to users. Without extensive education and involvement of users, every move from one computing environment to another will be seen as a mistake by users. With the proper education and involvement, however, users can become advocates for change and will actually help sell the need to "retire" hardware and software.

While it is clear that the creation of two separate computing organizations allows each to tailor its applications, expertise, and services to a more homogeneous community of interests, it is less clear how such an organizational structure can deal effectively with the problems and opportunities which the evolution of technology brings. As technology converges, organization lines begin to blur. As institutions plan for voice, data, and video communications to allow for educational enhancements such as instructional T.V. or better access to the library, the need arises for a coordinated plan involving departments such as telecommunications, the library, media services, and computer services. It is our belief that an organizational structure driven by goals, not technology, *can* effectively deal with changing technology. In fact, it would be impossible to create a static organizational structure to reflect changing technology. A better approach to dealing with the convergence of technologies is to overcome the

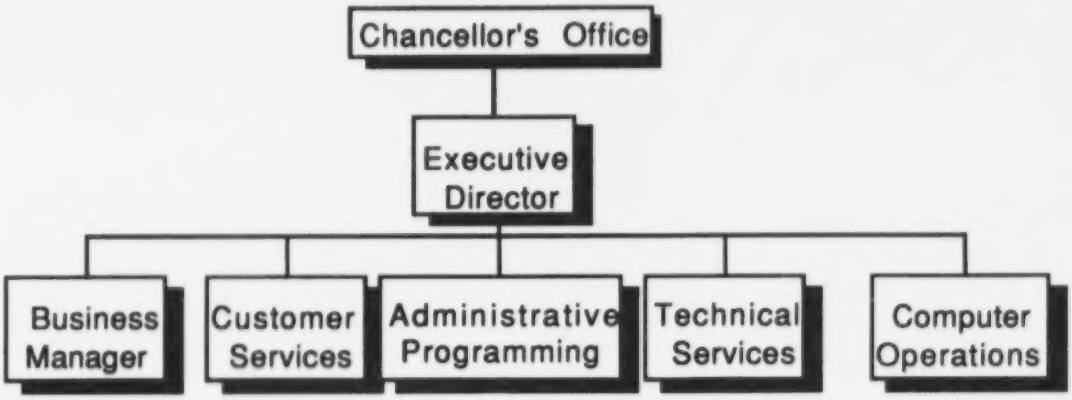
organizational rigidity of the departmental structure. It has been our experience that committees made up of staff members from different groups within a department, from different departments, or even from different campuses within the University System can be extremely effective in defining needs and designing and implementing projects to meet those needs. And, these committees are apt to be more effective precisely because they have a common need and not because they are members of the same department. Thus, the keys to successful management of technology lie not so much in a particular organizational structure, but in clearly defined needs and responsibilities and adequate communications.

Conclusions

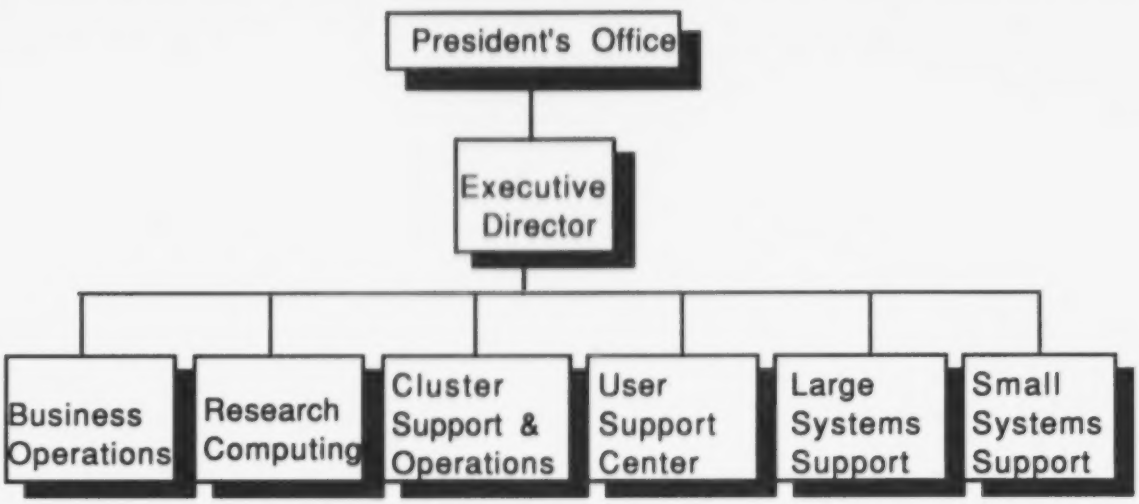
The conclusions to be drawn from the successful reorganization of computing at the University of New Hampshire can serve as guidelines for other institutions considering reorganization. In deciding how to organize, institutions must ask themselves questions, not only about future trends in technology, but also about institutional goals and internal factors which might limit organizational choices. Once they have answers to these questions, institutions will be in a good position to determine how best to organize computing for the successful delivery of services. Given the diversity found in institutions of higher education, however, it is clear that there is no one right way to organize and manage technology. While the questions institutions must ask themselves are similar, the answers will depend on individual circumstances.

Illustration #1

U.S.N.H.
Computer Services Organization



U.N.H.
University Computing Organization



MANAGING FOR SUCCESSFUL INNOVATION

EUGENE E. PAYNE, PH.D.
TEXAS TECH UNIVERSITY
LUBBOCK
TEXAS

A manager feels obligated to claim to be interested in innovative solutions, but is that manager willing to take the steps necessary to create a management environment which promotes innovation? There are no quick, simple fixes in making the workplace exciting, lively, and friendly to innovation. This paper addresses a managerial process, in terms of attitudes, beliefs, skills, and tools, necessary to create such an environment.

MANAGING FOR SUCCESSFUL INNOVATION

I. INTRODUCTION

A manager feels obligated to claim to be interested in innovative solutions to management problems, but is that manager willing to take the steps necessary to create a management environment which promotes innovation? There are no quick, simple fixes to making the workplace exciting, lively, and friendly to innovation. This paper discusses the managerial process, in terms of attitudes, skills, and tools, necessary to create such an environment.

What is innovation, and why should a manager be interested in promoting it? Innovation is the act of creating something new. This could be a process or a devise or a method. These new creations are the "new mousetraps" which help an organization to become a high performer and achieve its goals. This is true regardless of whether the organization's mission is to provide a service to society or to make profits for shareholders.

This report is based upon actual experiences at Texas Tech University from 1981 to 1987 where innovation in the service departments was promoted through the creation of a new work environment. Detailed information is available in the Annual Report of Accomplishments for Fiscal Year 1987, published by the Finance and Administration Division of Texas Tech University, which validates the improvements in service which accompanied the innovation; however, all these individual achievements in the service department area can be summarized in four statements:

-- A nationwide survey of students rated Texas Tech University as significantly better than the average university in the maintenance of buildings and grounds and the handling of student administrative matters, such as billing, fee-payment procedures, and registration.

-- The cost per student for general administration is one of the lowest of the three dozen Texas public universities.

-- The cost per unit for building maintenance, custodial services, and grounds maintenance are among the lowest of the three dozen Texas public universities.

-- In recent years Texas Tech has consistently won one or more awards in the annual cost reduction program sponsored by the USX Foundation and the National Association of College and University Business Officers.

This paper does not attempt to hold out Texas Tech as a model of efficiency and effectiveness in the operation of service departments. The institutional management would quickly agree that they have a long way to go before coming close to perfection. The purpose of pointing out recent successes is that they coincide with recent changes in the management environment. Concerning management attitudes, beliefs, skills, and tools discussed below, few, if any, are unique to Texas Tech; however, the

grouping and implementation are interesting. Even more interesting is the impact upon the achievement level.

II. DEFINITION OF THE MANAGEMENT ENVIRONMENT IN TERMS OF ATTITUDES, BELIEFS, SKILLS, AND TOOLS

The management environment of an organization can be defined in terms of the attitudes and beliefs that management shares, the common skills of the management team, and the tools used by the management team. This integrated set of characteristics has a significant impact upon creating an environment which promotes innovation.

ATTITUDES AND BELIEFS

The management environment is not defined by a statement from management, but by what the managers themselves believe and how they act. In order to change the environment, individual managers must buy into these changes. New attitudes and actions cannot be implemented by simply defining them. Managers must accept them as their way of life.

At Texas Tech the managers and supervisors of the service departments of the Finance and Administration Division believe they are different from those in other organizations. They believe they have developed a common sense of who they are. This was illustrated by an unrehearsed brainstorming session held in the spring of 1988 at an annual planning retreat where the thirty principal managers within this division were asked to describe the attitudes and beliefs that they felt the Finance and Administration management had in common. In this freewheeling session, within fifteen minutes a comprehensive list of attitudes and beliefs was mutually developed. The following is the unedited list:

Common Attitudes and Beliefs

- -- accountable/accountability.
- -- you can make waves if in the pursuit of improvement.
- -- you can make mistakes if in the pursuit of improvement.
- -- open/participative management.
- -- no back-biting/not political.
- -- customer oriented (external).
- -- innovation encouraged.
- -- nothing gets lost; i.e., assignments are not forgotten.
- -- continuously setting goals and follow-up.
- -- teamwork.
- -- friendly competition.
- -- talk to your customers.
- -- information flows up and down the organization.
- -- professionalism.
- -- keep supervisors and subordinates informed.
- -- what you accomplish is more important than how you do it.
- -- recognize achievement.
- -- delegate.
- -- follow-up.
- -- more paperwork.

-- "if it ain't broke, don't fix it" is not the motto/"be the best you can be".
-- question if it's the best.

During this discussion, an observer could detect from the participants a prevailing sense of ownership and pride that these were firmly held common beliefs within the organization. It is the same kind of feeling that some athletic teams exude when they truly believes they are different and better than other teams because of one or more noble characteristics. It has been shown that a belief can become reality if there are no over-riding physical impediments.

The philosophy of the Texas Tech service department managers was developed slowly over several years. The leadership felt that to create the environment desired, these attitudes and beliefs had to be held and practiced throughout the organizational structure from bottom to top. This philosophy was informally suggested and nurtured by the leadership through example, coaching, and cheerleading. Managers were coached and then they coached their subordinates. This did not happen haphazardly. It required a dedicated, conscientious effort and a structured management system which facilitated the setting and following up of goals.

The above listed attitudes and beliefs can be condensed into the following set. It is interesting to note that, while used by the division leader as a blueprint, these attitudes and beliefs were never shared. Instead, each piece was passed along and reinforced, usually by the Socratic method, at appropriate times when that attitude or belief could be incorporated into a decision, policy, procedure, or "lesson".

1. The credo is "be the best we can be -- and that's damn good".

2. Practice participative management. Each person has the right and the obligation to state his opinion. Candid discussion and disagreement are expected and not considered disloyal. Respect for the opinion of others (superiors, peers, subordinates) must be shown. When a decision is reached, all accept it and work as if it were their own. Discourage anyone from sitting back and saying "I told you so". The "boss" is respected, but is not God.

3. Don't play political games. Vindictive action against peers is self-defeating, a waste of energy, and inappropriate.

4. Keep score and give feedback to the players. Assignments are tracked and followed up. Formal customer evaluations and surveys are made. Measurements are taken. Routine personnel performance evaluations are conducted.

5. Be results oriented. Goals are continuously set, and measurements of attainment made. An important measure of success is the customer's perception.

6. Encourage innovation if it results in improvement.

7. Allow people to make mistakes in the pursuit of improvement. The most effective way to learn is through mistakes. If one never makes mistakes, he is probably not trying hard enough. It is part of the coach's job to assure that subordinates do not make mistakes which threaten either the subordinates' or the organization's survival.

8. An unacceptable mistake is to knowingly hide a problem from one's superior.

9. Challenge people to be successful and then celebrate their achievements.

10. A manager is measured by the success of his subordinates. A manager is expected to develop and support his people.

11. Delegate but don't abdicate. This means that one not only delegates authority and responsibility, but also sets specific goals and timetables and then follows up. This is the antithesis of the management concept of "hiring good people and leaving them alone".

12. Practice the good care and feeding of monkeys. Each person feeds his own monkeys (i.e., is held accountable for his own responsibilities). A manager does not feed his subordinates' monkeys (i.e., reverse delegation is not permitted). Subordinates are expected to bring solutions when they report problems.

13. Use the chain of command. The chain can promote and strengthen good management; however, don't let it prevent good horizontal communication.

14. Have fun and keep a good sense of humor. Laugh at yourself occasionally.

SKILLS

The managers within the organization must have certain basic skills. Some are more important than others. The following are some of the skills which Texas Tech has worked to improve:

1. Communication. It is important for managers to be able to communicate orally and in writing. The best way to improve is by practice; therefore, managers from the bottom to the top are given frequent opportunities to make presentations on their goals, achievements, problems, and solutions to problems. Presentations are frequently critiqued. The same is true of written presentations. Most managers have found it necessary to sharpen their writing skills.

2. Evaluation of Personnel. Formal structured evaluations are encouraged.

3. Time Management. Through numerous joint training sessions of all managers, time management skills were improved. The joint sessions were found to be necessary to create a common set of beliefs in and

knowledge of specific time management techniques. It is most effective for the organization when all managers have a common understanding of techniques such as screening calls; the correct way to conduct a meeting; how to effectively use a secretary; how to follow-up on agreements; and how to develop and maintain a procedure system.

4. Techniques for Planning and Problem Solving. Through training, practice, and incorporation into the method of operation, middle and upper-level managers of the Finance and Administration Division have developed their skills in the use of several planning and problem-solving techniques, including time-action planning, brainstorming, and performing SWOT (Strengths, Weaknesses, Opportunities, Threats) analyses.

5. Coaching. Through example managers are taught the coaching techniques for working with their subordinates. Managers understand that they are responsible for developing their subordinates and that their success is, at least partially, measured by the successes of their subordinates.

TOOLS

While not as important as attitudes and beliefs, or even as important as management skills, tools nevertheless play a key role in defining the management style of an organization. The most prominent management tools used in the Texas Tech service department areas are:

1. Management by objectives. Some organizations have been brought to their knees by the paperwork required to implement an MBO system. The basic objectives of Peter Drucker's ideas can be lost in all the numbers. Texas Tech's administration believes that if correctly implemented, this problem can be avoided and an MBO system can provide a complete framework for effective management. Texas Tech has been well pleased with their five-year-old implementation of the guidelines presented in MBO Goes to College by Art Deegan, et al. Formal reviews of progress are held twice a year.

2. Project management system. Tech believes it is important for each manager to have a system for developing, assigning, and tracking both long-term and short-term projects. In the Finance and Administration Division, all assignments are tracked.

3. Annual report of accomplishments. This tool is used to promote communication of what is happening in each of the various service departments as well as facilitating the setting of goals, giving appropriate pats on the back, identifying difficult problems to be solved, and improving writing skills.

4. Annual planning and development retreats. Within the Finance and Administration organization, the annual planning and development retreat has been institutionalized into a two-day session held at a rustic, off-campus location. The purposes of this retreat are:

-- Training of all middle and upper-level managers in one management technique selected as the area of concentration for that year's session.

-- Review of mission statements and goals from the prior year. Innovative goals are set, and problem-solving sessions are held.

-- Free-time activities (e.g., canoeing rapids) help build the basis for professional teamwork.

5. Annual "show and tell." Annually, each of the primary service departments gives a ten-minute show-and-tell briefing. These are held over three afternoons in one week. Each manager has ten minutes to review his mission, goals of the previous year, results on achieving those goals, and goals for the next year. One hundred percent achievement of all goals is not expected. The division vice president provides a critique of each presentation. Although attendance is not mandatory, most managers attend all three sessions.

6. Evaluation/feedback systems. There are several institutionalized feedback systems for evaluation of performance. These include a formal annual administrative evaluation survey of academic departments to rate the work of service departments. Customers (academic departments) confidentially provide specific ratings in five different areas. One of the MBO indicators for each service department head is the service rating by academic departments. The service department head, along with his superior, sets the service rating goal for the next year.

   Departmental visits are made regularly by service department heads to academic departments. Results of these visits are documented with copies provided to concerned managers.

7. Policy/procedure system. The division has a commitment to the development and utilization of a formal system of written policies and procedures. There is not a special office which writes policies. On the contrary, each department head is responsible for the publication and updating of the procedures in his area. These are used across the university. A specific format is used, and regular reviews and updates are performed. User departments, through their deans, have an opportunity to review and comment on new procedures before they are published or updated.

8. Structured staff meetings Structured staff meetings are held at each management level. Over a period of several years, primary managers have been trained in their use. These staff meetings provide a forum for tracking assignments, developing action lists, and communicating what's happening both up and down the chain of command. Staff meetings are not used for problem solving, but rather communication.

III. ASSESSMENT OF THE BENEFITS AND BURDENS OF MANAGEMENT FOR INNOVATION

The management environment of the service departments at Texas Tech University was altered through changes in management attitudes, beliefs,

skills, and tools. This new environment which facilitates successful innovation has both benefits and burdens:

1. Benefits to the Institution

   a. More innovative solutions are identified.

   b. There is improved planning with a focus on the future.

   c. There is an improved level of professionalism in the staff.

   d. There are improved communications up and down the chain of command.

   e. There is improved motivation of the staff.

   f. Service departments are more results-oriented.

   g. There is a higher level of achievement across-the-board.

   h. The staff have an improved sensitivity to the mission and goals of the department versus a concentration on activities and resources. The department tends to be more outward-looking than inward-looking.

   i. Political game-playing is reduced.

2. Benefits for Supervisors in the Service Departments

   a. Responsibilities and authorities are better clarified. Ambiguities of expectations are removed.

   b. The environment provides a good framework for coaching.

   c. The environment promotes a more positive supervisor-subordinate relationship.

   d. The environment improves motivation of subordinates.

   e. The environment assists subordinates in reaching their potential.

   f. Assignments aren't forgotten.

3. Benefits for Individual Employees in the Service Departments

   a. The workplace is more lively and exciting, and more friendly to suggestions made by employees.

   b. Responsibilities and authorities are better clarified.

   c. There is a measurement by known performance standards.

   d. There is improved job satisfaction and recognition of accomplishments.

4. Burdens

a. There is increased paperwork.

b. The new management environment provides managers greater control and ability to increase pressure for performance. If managers misuse this power, it can frustrate subordinates with ever-increasing performance standards.

c. There can be an over-emphasis on implementing new methods and procedures which have only marginal improvements.

d. There is a more structured management environment. Some people prefer a more laid-back approach.

e. Because this management environment provides good reporting and control, there is the danger that the "boss" can get too low in the operation of the organization thereby usurping the authority of the subordinate.

f. Many of the tools which make up part of the environment, such as MBO, can be misused in a cookbook approach. If this approach is taken, losing sight of goals and objectives, the management environment can deteriorate into a paper-pushing bureaucracy.

IV. SUMMARY

The Texas Tech case demonstrates that the management environment can be consciously altered to create an atmosphere more friendly to innovation. While both benefits and burdens were found to exist, the results were positive for the university. Increased innovation contributed to improving the performance levels across-the-board in those departments studied. Implementation of changes in the management environment required a dedicated and concerted effort over a number of years.

Organizing for User Services

Steven Saltzberg
California State University, Fresno
Fresno, California

Thomas Miller
California State University, Fresno
Fresno, California

Abstract

The decentralization of computing coupled with the growth of office automation has created the need for campus wide, comprehensive support for the end user. While the "traditional" university computer center contains organizational units that collectively can meet many of these end user needs, a change in structure and attitude are necessary. While these user services can be provided by several university units, the computer center provides a natural focus for well planned, cohesive support. This paper examines planning, support and accountability in addition to the organizational issues of user services.

Presented at Cause 88
Nashville, Tennessee
December 1988

I. Introduction

California State University, Fresno is a large comprehensive public university offering a wide range of bachelor and master degrees. The campus has approximately 18,000 students, almost 900 faculty and a like number of staff. Five years ago the campus embarked upon an office automation project to bring computing to the departmental and administrative offices. Since then, the campus has progressed from 6 dedicated word processing workstations to over 300 intelligent workstations in administrative offices which are connected via local area networks. In addition, there are approximately 400 faculty members with stand-alone workstations that require some level of computer center services. The user community (faculty, staff, and administration), expecting support from the campus computer center, has expanded from approximately 150 to over 1,000 in that same period of time. The success of this office automation project is clearly evident, but it has had a much broader impact: it has changed the computer center in ways that were never expected nor imagined.

II. Organization of the "Traditional" Computer Center

University computing centers have traditionally consisted of three major components: administrative programming, instructional support, and operations. Some centers have also (imagine this) had a separate planning area. But all these areas have been essentially separate with no real reason to interact (save the planning function). Table 1 shows this organization and its major functions. This type of organization served the needs of the university well until a few years ago. "Traditional" users worked on a centrally supported mainframe using applications developed or at least supported by the

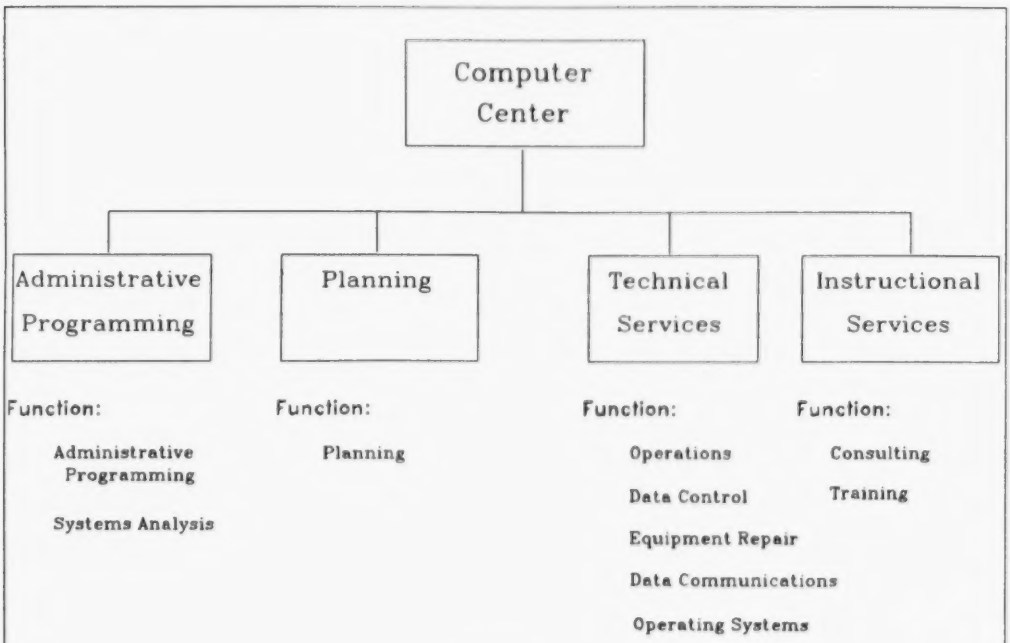


TABLE 1

computer center staff. These users tended to group homogeneously in their uses of the computer by application (i.e., administrative staff used the central system for student records and accounting while the faculty and students used the mainframe for research and instruction). This lent itself to the computer center organizing its support around these groups. The administrative needs were met by the "gurus" who designed, implemented and trained (the few users that needed it) on centralized systems that supported the administrators and financial planners on campus. The instructors and researchers consulted their "experts" and received primarily one-on-one attention for their needs. And everybody assumed that the operations staff simply did whatever they did in the cold, dark computer rooms that made the machines work and the printouts magically appear at predetermined destinations. And that essentially took care of ALL computer users on campus.

Then the simple world of centralized resources (equipment and staff) began to change. The "CPU on a chip" microcomputer age was upon us. At first this only meant that there were a few more users and a few more applications for our "experts" to work with. For the instructional staff, formal workshops began to take the place of the one-on-one consulting. The microcomputer age also brought with it the problem of maintaining many new workstations. But even that problem was generally solved by assigning this function to one of the existing areas, adding staff, and begging for the necessary budget. And, for the moment, both administrative programming and operations remained untouched.

What most computer centers were not ready for was the introduction, in large numbers, of intelligent workstations to the administrative and secretarial staff of their university. Once that process began, the computer center's organization would never be the same again.

The new users are primarily using desktop computers, using office application software, (e.g. word processing, spreadsheet, terminal emulation) and other applications not developed by the computer center staff. The new users that need word processing and spreadsheet support can be accommodated by the traditional instructional support area by expanding the training and support structure. Unfortunately for the computer center, the needs of the new user usually move beyond these basic uses.

These new users differ significantly from the traditional users in their need to develop a "working knowledge" of computing with a range of applications that include not only office products but also mainframe access to student records and accounting systems. And needs do not end there: electronic mail access, desktop publishing capability, and local database development become important priorities. These new users need extensive training to understand computing systems and take full advantage of the computing technology that is now available. They need consulting services to assist them in choosing appropriate hardware and software and, in general, they need more hand holding and training than their "traditional" counterparts.

The needs of the new users do not fit nicely into the "traditional" computer center organization because the heterogeneous mix of applications that crosses over the unit boundaries within the traditional computer center creating an ambiguous environment for most users. The training group that was put together for office automation (word processing and spreadsheets) is not capable of supporting student records access or the centralized accounting system. That function is supported by the administrative programming group. Even with the best of communications, the users may not know who to call when their desktop office automation workstation is running an administrative application. They now have several different people to call and it is sometimes unclear as to what kind of problem it is (e.g., terminal emulator problems running an administrative system on the mainframe) and who is responsible for solving the problem.

III. Issues That Result from Decentralized Computing

Office Automation

While centralized computing has been the major computing emphasis on university campuses for years, it has now been upstaged by the decentralized desktop, intelligent workstation. Offices that have been using centralized systems are now tracking their own budgets and expenditures with spreadsheets at their own workstations. Departmental inventories, student information, and scheduling information are being kept in "local" databases not developed or maintained by the computer center. These "new" office applications are now accomplished without using centralized resources and are not necessarily supported by the computer center.

Office automation has now become an established part of everyday business. And because it is so integral to everyday office operations, selecting systems that work (both hardware and software) is essential. Selecting and installing office automation systems is the easy part, the difficult part is support. While microcomputers are easier to train users on, supporting office automation is still resource intensive and, at a minimum, requires an extensive training and support program. In addition, once the user begins to see the power of the office products they use, access to centralized resources is expected as well. Users soon want to automate as many phases of their operation as possible; they want this equipment to fulfill its promise of higher productivity and greater access to information.

Significant increase in the number of users

The explosion of office applications and desktop computing has brought with it an explosion in the number of users. Even if these were all "traditional" users, it would require additional staff to properly service them. When you add the increased demands being made by these new users, you have a support task of significant proportions.

To further compound the situation, most of the new users are new to computing, but they need to gain a "working knowledge" of computing in order to perform the more technical aspects of their jobs. This requires considerably more staff time to "hold their hands" through the learning process. And in depth training takes significantly more time to include in a training program.

A well planned training program is essential if office users are to reach a higher level of productivity quickly. Another benefit of training is that users learn in groups and create informal consultative arrangements with their coworkers. This results in an even higher level of "hand holding", less computer center staff time, and a shorter learning curve. Beyond training however, hours are spent on the telephone and in person helping the users become proficient in office technology. However, in the long term, this "hand holding" is cost effective for the university in terms of higher productivity and greater technical expertise.

Developing and Supporting Databases

As users become more familiar with computing they naturally progress into database applications. The problems arise when the user develops their own database and then runs into trouble. The user invariably looks to the computer center for assistance. The challenge for the computer center is to find a way to assist the user without expending an enormous amount of resources and still keep the user responsible for his or her own applications.

Another database issue, whether developed by the user or the computer center, is deciding on which computing resource it belong. It can be stand alone, networked for a small number of users or placed on the mainframe. There are many technical and logistic issues that need to be considered. The major concerns are: the size of the database (don't put large,

shared databases on a local area network), the number of users sharing the database, the location in the network of the users sharing a database, and the tools available to develop the database.

It is important for the users to understand that developing their own database – on any hardware – will severely restrict the support the computer center can provide. Essentially, user developed databases will only get consulting support; it will be the responsibility of the user to actually fix their problem. Additional issues that users need to be made aware of are database security and backup provisions. If these issues are discussed early, the user is less likely to feel abandoned later.

Standards

Any support unit recognizes that it cannot meet all the requests of all its customers. Since new end users outnumber the traditional users many fold, decisions on the extent and type of hardware and software support must be made early. The university community will initially balk at standards, saying something about "academic freedom", but the alternatives are less acceptable. The computer center has always made choices regarding its commitment in staff and funding to support campus needs. The only difference here is in the number that are affected: the choice of a mainframe statistical package will create concern for a few dozen faculty while a word processing standard can create a debate amongst hundreds of users.

The significant points in choosing standards are to consult with the university community and to publish these standards regularly. Often the user perceives that he/she cannot, for example, "buy the PC of my choice". The view of the computer center, however, should be that the choice is up to the user: they can purchase a standard hardware or software product and receive support or purchase a non-supported product and be responsible for making the software work or fixing the hardware. As in the previous discussion on database development, the better the user understands the reason for standards, the less likely they are to feel abandoned when they have a problem.

Who provides the services in this decentralized environment?

In providing for user services, the computer center has the unique opportunity to increase its value to the university by providing needed services in a cohesive manner. The opportunity to work closely with every facet of the university not only makes the computer center more aware of the university's function and mission, but also allows the university to appreciate the computer center's importance.

While other university units could decide to take on the tasks of user services, the expertise already exists in the computer center, and any other unit would have to rely heavily on computer center expertise. The computer center is increasingly becoming a service, not a production, organization and the needs of user services naturally fit into this role.

IV. Evolving the organization to support User Services

The new user group is now making demands on all the areas of the "traditional" organization: The administrative programming group is expected to provide for local data bases that run on desktop computers as well as for the downloading and uploading of data with mainframe databases. Instructional support is expected to provide the consulting and training for these new users. And operations is supposed to provide for backups and paper and ribbons as well as the installation of workstation, cables, printers, networks and communications.

For the first time, significant numbers of users are needing and requesting services from every segment of the computer center staff. For the first time, members of the computer center staff from all its component areas, need to be talking to and working with each other.

Where does user services belong? Everywhere!

Where do you place it organizationally? (This is not a one word answer).

Because user services support comes from all aspects of the organization, it is necessary for the organization to change, not only on paper, but also in attitude. The separate areas of a computer center must undergo a change in its interpersonal communications structure in order to take care of these users. The important point is that it is difficult (if not impossible) to place ALL the user services support in a separate organizational area; consequently, the computer center must be certain that internal decisions have been made that address all the users needs and avoids leaving them hanging.

This may not be nearly as difficult as it first seems. The first step is to define a user services area and provide staffing. Using this unit as the kernel, the support structure can evolve readily. The placement of this new area will depend on the existing organization and upon the size of the user community. The major functions of user services include training, consulting, hand-holding, equipment installation and maintenance, interface with centralized resources (mainframes and networks), and creation and support of small user databases. The new user services unit can be organizationally placed in three areas: a stand-alone unit reporting to the director (see Table 2), included as a unit reporting to "Instruction" or included as a unit reporting to "Administrative Programming".

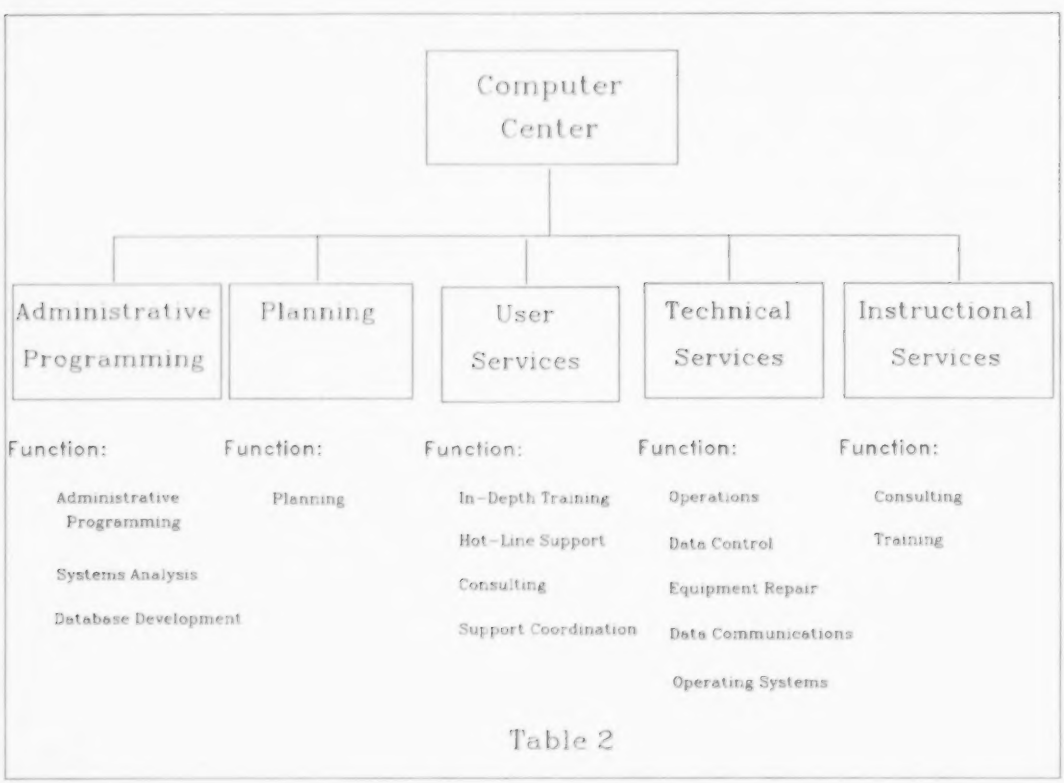


Table 2

An important organizational decision is: what will be the most efficient, cost-effective way to meet users needs. Typically, there is sufficient expertise in existing staff to make it possible to create and support this function. Generally, the initial functions of user services deals with training and consulting; which is why user services often starts as an extension of instructional support.

The problem with most university environments is that the needs exist long before the computer center can evolve a support structure. Consequently, instructional support (either gladly or begrudgingly, depending on the personnel involved) initially take on these new users. And then calls for help and resources later. Clearly, installation becomes an issue very early in this process, while the users may take awhile to express needs for data base systems and mainframe access. However, the problems of coordination are the same for consulting, training, installation, maintenance, and administrative programming: from the user's perspective somebody needs to be in charge.

Consequently, one of the major organizational issues for user services comes to this: user services must provide the focus for all the user's needs even if the expertise are in other organizational units within the computer center. Specifically, no matter what the organizational chart looks like, it is the PRIME role of this unit to make sure that the user's needs are met. Generally, user services staff will be able to provide the training and consulting role while the remaining functions (installation, maintenance, data bases and mainframe access) are supported by other computer center organizational units. The user must be the focus for the organization. The user must perceive that he/she has someone to contact to have all their problems resolved. It is the role of user services to FIND the answer, have the right person respond to the user, and then follow through to make sure the user has been helped.

The problems that the computer center are likely to encounter involve a clear understanding of how the internal organizational units are to interact and cooperate to resolve user problems. The typical kinds of problems that involve several areas:

-- my workstation has access to the mainframe and I can't get the data to download to my machine

-- my graduate student developed a data base in RBase for me and it suddenly won't work

-- I think my workstation is on a network and I can't login (but my neighbor can and she is, I think, on the same network)

-- we're running an application that your programming staff wrote for us but since the operating system upgrade it sometimes "crashes"

In fact the answer to all these problems are the same: the user knows who to contact (user services) and the user services staff member knows who to talk to in order to resolve the problem. While this sounds like an easy answer, the responsibility of carrying through on resolving these problems is a significant time and logistics resource.

V. Role of User Services

The earlier the computer center gets involved in planning for office automation and user services needs the better. If users can be clearly shown the pros and cons of various types of systems and told the consequences of choosing one system over another, an invaluable service will be provided and the university will benefit.

One of the major choices is a stand-alone versus a networked or clustered system. Networks have their up sides and their downs. Local area networks are easier to manage than stand-alone systems since fewer hard disks and fewer copies of the operating systems are supported. However, networks can be restrictive and slower than

stand-alone systems. If the users and managers clearly understand these issues going in, there will be fewer surprises and disappointments later on. However, even if a stand-alone system is chosen, it still it needs to be connected to the campus data network for access to the mainframe and other resources.

The need for an organized and thorough training program is greater than ever. Since training staff does not generally grow at the same rate as the user community, a method of streamlining support for this ever growing user base is necessary A goal of user services should be to use training, consulting and hot line support as methods to increase user independence. The training program should be highly structured, and contain regularly scheduled follow up sessions that reinforce learning and add new materials. A complete training program includes not only the technical aspects of using the system, word processing, and spreadsheets, but also the system capabilities. These should include: databases, electronic mail, desktop publishing, etc. In the training process, the concepts of computing must be taught along with all of the "how to" information. Teaching the concepts of computing to a largely non-technical group is a tremendous challenge for an often very technical computer center staff.

The consultative process can anticipate future problems and find ways to avoid them by customizing the user interface system, restructuring training, or even selecting different hardware or software. It is in these ways that consulting and training go hand in hand. A good consulting program will also save the "drop outs" that give up when they first run into trouble.

A "Hot Line" type of support is absolutely necessary when implementing user services. New users need rapid response to their questions to keep frustration to a minimum. In addition, point out weaknesses in documentation and training and suggest areas for improvement. One of the problems with "hot line" service is that it requires continual staff availability and in-depth understanding of the applications they are supporting. A major benefit of a "Hot Line" is that it provides continual feedback about what is working and what is not. Users learn applications more rapidly and develop more independence when all these programs are put in place.

VI. Management Issues

The first management problem is, of course, the organization itself. As has been discussed earlier, the organization is going to have to change, both on paper and in attitude. While several possible organizational options were suggested, it is recommended that personalities, attitudes, and expertise are the essential ingredients in devising a management strategy to include user services. One of the more difficult problems for user services is the coordination amongst the separate areas of the computer center. One solution to this coordination issue is to place a single manager over most areas (e.g. user services, equipment maintenance and installation, instructional support, and data communications). In this way the coordination that is required is provided by a single manager.

The "normal" route to establishing user services is to initially use instructional staff to provide the training and consulting. And, in some organizations, the mix of instructional staff and user services staff under a single manager could easily be the best permanent solution. The actual staff size varies somewhat based upon the technology being supported since stand alone workstations are more time consuming to support than are clustered environments with a single hard disk server. However, the basic training and consulting services are essentially independent of the technology. Generally experience indicates that one consultant is required for every 100 to 150 workstations in an office automation environment; and one consultant is needed for approximately every

200 to 250 faculty workstations. If equipment is installed, cabled and maintained by in-house personnel, one technician is required for every 250 workstations.

It should be clear that user services and the related support issues are resource intensive and require staffing and equipment maintenance funding. A computer center that embarks on this mission must understand that sooner or later the campus will demand to know why computing support is getting so expensive. It was once thought that as decentralization increased, the size and budget of a centralized computer center would decrease. However, decentralization has resulted in quite the opposite reaction on most campuses: as computing has become more pervasive, it is the computer center that is looked to for support. As the university computing budget expands, accountability becomes increasingly important. Let us be clear here: in order to do the job, record keeping is essential. Records should be maintained that describe who was trained and how many hours of training were offered, the number of consulting requests and staff responsiveness to them, and equipment installation and maintenance requests and staff responsiveness to them. It is also nice that this record keeping can provide the accountability that the administration or some campus committee will eventually insist upon.

Needless to say, the other element necessary for accountability is the existence of clearly defined procedures for all types of user services support. At a minimum, procedures should exist for training schedules and standards, consulting availability, software standards, hardware standards, equipment installation scheduling, and equipment maintenance responsiveness.

Finally, a campus should recognize from the outset that the services discussed here are expensive. Any campus beginning this journey will want to be certain that their administration understand the commitment it is making when it decides to bring the resources of user services to campus.